

ANDHRA UNIVERSITY



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All Official letters, packages etc, should be addressed to the Registrar by designation and not by name.

Visakhapatnam,
Dt: 22-12-2022

No. L1 (1&2)/U.G. SEC's Courses/ Syllabi & MQP/2020-21

From: **THE REGISTRAR**

To

The Controller of Examinations,
Andhra University,
Visakhapatnam.

Sir,

Sub: Approval of Syllabus & Model Question Papers – Reg.
Ref: B.A. B.Sc. Syllabus & Model Question Papers.

With reference to the above, I am by direction to inform you that the Choice Based Credit System, U.G. Skill Enhancement Courses (w.e.f. 2020-2021) Syllabus & Model Question Papers have been approved as detailed below:

S.No.	Subject/Email dated	Name & Designation	Name of the College	Syllabus & Model question paper	Name of the Paper
1.	B.A Music / 09-12-2022	Ms. Vijapurapu Lalitha	Faculty	Model Question Papers / Syllabus	1.Paper-V-Musiocology-(A) 2.Paper-VI-Musicology
2.	B.Sc. Computer Science/Data Science/Internet of Things/ 4 years B.Sc. (Hons)/ BCA / 10-12-2022	Prof. S. Pallam Setty/ Chairman	Dept. of Computer Science & System Engineering, Andhra University, Visakhapatnam	Semester -V Syllabus / Model Question Papers	1.Wireless Communication and Networks. 2.Introduction to Unix and Linux. 3.Cryptography and Network Security. 4.Data Storage Technologies and Networks. 5.Network Programming. 6.Intrusion Detection & Prevention Systems. 1.Machine Learning Using Python. 2.Digital Imaging. 3.Cyber Security and Malware Analysis. 4.Internet of Things. 5.Mobile Application Development. 1.PC Hardware and Networking.

					1.Web Interface Designing Technologies. 2.Web Applications Development using PHP & MYSQL. 3.Internet of Things. 4.Application Development Using Python. 5.Date Science. 6.Python for Data Science.
					1.Course 6A: Data Analytics with Tableau. 2.Course 7A: AI Concepts and Techniques with Python. 3.Course 6B: Supervised ML with Python. 4.Course 7B: Unsupervised ML with Python. 5.Course 6C: NLP with Python. 6.Course 7C: Deep Learning Neural Networks with Python
					1.Big data Analytics using R 2.Data Science Using Python. 3.Mobile Application Development 4.Mobile Application Development 5.E-Commerce Application Development. 6.Real Time Governance System (RTGS) 7.Multimedia Tools and Applications. 8.Digital Imaging.

Hence, I request to arrange to circulate the same among the Teaching Staff and Students concerned and placed in A.U. website.

Yours faithfully,



(K. UMA MAHESWARI)
DEPUTY REGISTRAR (ACADEMIC)

Copies to:

1. The Dean of Academic Affairs, A.U., VSP.
2. The Dean, U.G. & P.G, Professional Courses, A.U., Vsp.
3. The Dean, CDC, A.U., Vsp.
4. The Dean, Confidential, A.U., Vsp.
5. All Principals, A.U. Affiliated Colleges Offered in U.G. courses.
6. The Superintendent S I Section for taking necessary further action.
7. The Secretary to V.C., Rector Table, P.A. to Registrar, A.U., Vsp.
8. The Director, Computer Centre, A.U., Vsp.
9. O.C. & O.O.F.

Sem - V Paper - II

[BA-S 3360]

B.A. (CBCS) DEGREE EXAMINATION.

~~Semester~~ Semester — V

Part II — Music

Paper ~~V~~ MUSICOLOGY — (A)

(With Effective from the admitted batch of 2015–2016)

Time : Three hours

Maximum : 75 marks

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE from the following Eight questions.

1. Discuss the ancient Raga system.
ప్రాచీన రాగపద్ధతిని వివరింపుము.
2. Write about the Sudda, Chayalaga, Sankerna Ragas.
శుద్ధ, ఛాయాలగ, సంకీర్ణ రాగాలను గూర్చి వ్రాయుము.
3. Write about the Carnatic and Hindustani Ragas of Hindola and Malkos.
కర్ణాటక, హిందూస్థానీ రాగాలైన హిందోళ, మల్కోస్లను గూర్చి వ్రాయుము.
4. Write about the "Thumri".
"తుమ్రీ" గూర్చి వ్రాయుము.

5. Explain the following :

- (a) Mukthaga Kampita Raga
- (b) Krama Auadava Raga
- (c) Udaya Raga
- (d) Trianyaswara Bhashanga Raga
- (e) Auada, Shadava Raga

క్రిందివానిని వివరింపుము.

- (a) ముక్తాంగ కంపిత రాగము
- (b) క్రమ ఔడవ రాగము
- (c) ఉదయ రాగము
- (d) త్రిఅన్యస్వర భాషాంగ రాగము
- (e) ఔడవ, షాడవ రాగము

6. Write about the "Tansen".

“తాన్ సేన్” గూర్చి వ్రాయుము.

7. Explain about the "Khayal".

“ఖయల్” గూర్చి వివరింపుము.

8. Write about the "Sitar" instrument.

“సితార్” వాద్యమును గూర్చి వ్రాయుము.

SECTION B — (5 × 10 = 50 marks)

Answer the following (ONE from each Unit).

UNIT I

9. (a) Explain the classification of Raga.
రాగవర్గీకరణను వివరింపుము.

Or

- (b) Discuss the Raga, Ragini system.
రాగ, రాగిణి పద్ధతిని చర్చించుము.

UNIT II

10. (a) Write about the life history of "Surdas".
"సుర్దాస్" జీవితచరిత్రను వివరింపుము.

Or

- (b) Describe the "Tabla" instrument with diagram.
"తబల" వాద్యమును పటసహితముగా వివరింపుము.

UNIT III

11. (a) Write an essay on Manodharma Sangeetam.
మనోధర్మ సంగీతమును గూర్చి వ్యాసమును వ్రాయుము.

Or

- (b) Explain the Ragalapana system.
రాగాలాలపన పద్ధతిని వివరింపుము.

UNIT IV

12. (a) Explain the following :

Carnatic music raga-Hindustani music raga

(i) Mohana – Bhup

(ii) Yaman – Kalyani.

కర్ణాటక సంగీతరాగము - హిందూస్థానీ సంగీతరాగము

(i) మోహన - భూప్

(ii) యమన్ - కల్యాణి

Or

(b) (i) Thodi-Bhairavi

(ii) Mayamalavagowla-Bhairav.

(i) తోడి - భైరవి

(ii) మాయామాళవగౌళ - భైరవ్

UNIT V

13. (a) Write about the "Drupadh".

“ద్రుపద్” ను గూర్చి వ్రాయుము.

Or

(b) Write about the "Kerthana".

“కీర్తన” గూర్చి వ్రాయుము

SEMESTER -V paper -VI
Musicology

75 Marks

SECTION -A (5x5=25 Marks)

Answer any five from the following Eight Questions

1. Describe about the term Beats?
బీట్స్ ను వివరించుము
2. Write about the term pitch Intensity ?
పిచ్ తీవ్రతను తెలుపుము
3. Write the term Acoustic concert halls, And also necessary precautions while building the acoustic concert halls ?
సభాభవన నిర్మాణంలో తీసుకోవలసిన జాగ్రత్తలను వ్రాయుము ?
4. Write the term sympathetic vibration ?
సింపతిటిక్ వైబ్రేషన్ గురించి వ్రాయుము ?
5. Write about Dhvani taranga sashram ?
ధ్వని తరంగ శాస్త్రమును గురించి వివరించండి ?
6. Describe about the characteristics of Naada ?
నాద గుణములను గురించి వ్రాయుము.

7. Describe about the upper partial notes ?

అప్పర్ పార్షియల్ నోట్స్ (హార్మోనిక్స్)

8. Explain about the term Pratihwari ?

ప్రతిహ్వరి గురించి వివరించుము

SECTION-B (5x10 = 50 Marks)

9(a) Write about the contributions of Musical trinity ?

సంగీత త్రిమూర్తుల సేవ వివరించుము ?

(Or)

9(b) Describe the seats of Music (i) Vijayanagaram (ii) M

సంగీత క్షేత్రములు వివరించుము (i) విజయనగరం (ii) మ

10(a) Describe Janapada Sangeeta and its characteristics

జానపద సంగీతము మరియు వాటి లక్షణాలు

(Or)

10(b) Describe about the music seats (i) Tiruvananthapuram

(ii) Tirupati

సంగీత క్షేత్రములు తిరువనంతపురం మరియు తిరుపతి
గురించి వివరించుము.

11(a) Write about Mainadharm Sangeeta and its divisions ?
మనోధర్మ సంగీతము మరియు వాట విభాగములు గురించి వ్రాయండి

(04)

11(b) Write about Sangeeta Trimurti and their style ?
సంగీత త్రిమూర్తులు - వారి శైలి

12(a) Write Commentary on Sangeeta Trimurti's style ?
సంగీత త్రిమూర్తుల శైలిపై అభిరుచి వ్యాసం

(04)

12(b) Musical trinity's theme of Sahitya
త్రిమూర్తుల రచనలలోని సంగీత సాహిత్య అంశాలు

13(a) Write about Prabhandham ?
ప్రభంధము గూర్చి వివరించండి

(04)

13(b) Write about the Ragalakshanas (i) Devagandhari
(ii) Saraswati

దేవగాంధారి మరియు సరస్వతి రాగలక్షణాలు గూర్చి వివరించండి.

Semester-V

Unit 1:-

Evolution of raga.

Carnatic and Hindustani methods.

Raga division

Unit 2:-

Biographies

1) Tan Sen, Suradasu, Thulasidas,
Mirabai

Sangeet Instruments

1. Sitar, 2. Sarang, 3. Tabala,
4. Fakwaz, 5. Shahnai

Unit 3:-

Compare any 5 ragas in Carnatic music and Hindustani music. Explain with examples.

Musical compositions - Explain about Drupad, Khayal, Tumri, Kirtana, Tappatharana, Ghazal, Ragamalika

Unit 4:-

Hindustani talams which are similar (followed) in two music-styles

Unit 5:-

Learn about 5 similar Talas used in Carnatic and Hindustani music



Unit- 1: రాగ పరిణామము
కర్ణాటక, హిందుస్థానీ పద్ధతులు.
రాగ విభజన.

Unit- 2: జ్యోతిషే చరిత్రలు
① ఛాన్ సిన్, 2 సూరదాసు
3 తులసిదాసు 4 మృణాలము

Unit- 3 :- కర్ణాటక సంగీతం, హిందుస్థానీ
సంగీతంలలో గల వివిధ 5
రాగాలను సరిపోల్చి ఉదాహరణ
లతో వివరింపుము?

Unit- 4 :- సంగీత రచనలు
1 ద్రుపద 2 భయాల, 3 తప్పాతానా
4 ముమ్రు, 5 గజక. కొర్తన
7. రాగమాలికల వివరణ.

Unit- 5 :- హిందుస్థానీ తాళములు రెండు
సంగీత విధానాలలో ఉనుసరించు
పద్ధతులు:

కర్ణాటక హిందుస్థానీ సంగీతములలో
వాద్యము ఒకే విధమైన 5 తాళముల
గురించి తెలుసుకొనుట.

Model Question Paper
B.Sc 5th Semester
Wireless Communication and Networks

Max marks : 75

Time:3hr

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is meant by frequency reuse?
2. What are prioritizing handoffs?
3. Define handoff.
4. Discuss Ericsson Multiple Breakpoint model.
5. Write a short notes on Doppler spread.
6. Give the fundamentals of equalization.
7. List the advantages of WLAN.
8. Write about hiper lan WLL.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. Explain frequency reuse in detail.
OR
b. Explain in detail about Trunking and Grade of Service.
- 10.a. Discuss about Brewster angle. Explain about Longley- Ryce model
OR
b. Derive the Impulse response model of a Multipath channel.
11. Discuss about fast fading and slow fading.
OR
b. What is the difference between frequency selective fading and flat fading? How the received signal strength is predicted using the free space propagation Model? Explain
12.) Explain the algorithms for adaptive equalization.
OR
b. Derive the expression for Maximal Ratio Combining Improvement.
- 13.a. Compare and contrast IEEE 802.11 a, b, g and n standards.
OR
b. Discuss in detail about WLAN Topologies

Model Question Paper
B.Sc 5th Semester
Introduction to Unix and Linux

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. What is meant by kernel?
2. What is the difference between Linux file system and Windows file system?
3. Define Inter process communication.
4. Write a short on IPC.
5. What is a Socket.
6. Write a short note on Disk Utility.
7. Differentiate between Threads and Processes.
8. What is Message queue.

SECTION-B (10 X 5 = 50 Marks)
Answer the following Questions

- 9.a. Demonstrate the architecture of UNIX operating system.
OR
b. Explain Buffer Cache concept in detail.
- 10.a. Explain in detail about following operations.
i)open ii)create iii)read iv)write
OR
b. Write a shell script to count the number of lines in a text file without using wc command.
11. Demonstrate client/server communication using message queues.
OR
b. Explain Semaphores in detail.
12.) Explain the architecture of TCP/IP.
OR
b. Write a C Socket Program for Linux with a Server and Client Example Code.
- 13.a. What are the different types shells. Explain shell operations.
OR
b. Discuss Demand Paging concept.

Model Question Paper

B.Sc 5th Semester

Cryptography and Network Security

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. What is replay attack? What is the counter measure for it?
2. What is the role of Key Distribution centre?
3. Discuss the design principles of block cipher technique?
4. What are the requirements of the cryptographic hash functions?
5. What is e-mail security?
6. Differentiate between tunnel mode and transport mode of IPSec.
7. What is the difference between mono alphabetic and poly alphabetic cipher?
8. What is data authentication code?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9.a. Explain the operations, requirements, components of Network security model. [OR

b. Explain the UDP session hijacking in brief?

10 Discuss any four Substitution Technique and list their merits and demerits. [OR

b. Write a note on Block Cipher Design Principles.

11. Given $p=19$, $q=23$, and $e=3$ Use RSA algorithm to find n , $\phi(n)$ and d . [OR

b. Describe RSA Algorithm and Estimate the encryption and decryption values for the RSA algorithm parameters.

12.) Describe HMAC algorithm. Comment on the security of HMAC. [OR

b. Write and explain the digital signature algorithm.

13.a. Draw the IP security authentication header and describe the functions of each field. [OR

b. Why does PGP compress the message? What are the reasons for compressing the signature but before encryption?

Model Question Paper
B.Sc 5th Semester
Data Storage Technologies and Networks

Max marks : 75

Time: 3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. What is Virtualization?
2. What is Storage area networking?
3. What is meant by SATA.
4. What is meant by network attached storage.
5. Discuss Caching.
6. What is Head crash?
7. What are different types of data storage?
8. What are QoS Parameters of Storage area network?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. Explain Magnetic disk drive with neat sketch.

OR

- b. Explain Optical disk drive with neat sketch.

10. Demonstrate Memory Hierarchy with neat diagram.

OR

- b. Explain design issues of access for software and hardware.

11. Demonstrate Network attached storage.

OR

- b. Describe network issues in Hard Disk?

12.) Describe Caching concept with neat sketch.

OR

- b. Write and explain the Storage Partitioning.

- 13.a. Draw the hardware and software components in Storage area network.

OR

- b. Discuss Storage clusters and grids.

Model Question Paper
B.Sc 5th Semester
Network Programming

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. What is meant by SCTP.
2. Discuss Byte manipulation functions
3. What is meant by Socket.
4. Explain multiplexing.
5. Discuss Poll function.
6. What is Blocking I/O model?
7. What is meant by DNS.
8. What is meant SMTP.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. Explain OSI architecture model.

OR

- b. Explain IPv4 and IPv6.

- 10 . Describe elementary TCP socket functions with an example.

OR

- b. Write briefly about the TCP connection establishment, format and Buffer sizes.

11. Consider the TCP Echo Server and TCP Echo Client application and discuss what happens to the client when the server process crashes

OR

- b. Explain the functionality provided by select function. List the differences between Poll and Select functions

12.) Describe the UDP Echo server functions and lost datagram with an example.

OR

- b. Explain the IPv4 Socket Address Structure and IPv6 Socket Address Structure with suitable examples.

- 13.a. Discuss the use of Generic Socket and IPv4 Socket options. Write briefly about getsockopt and setsockopt functions.

OR

- b. Explain in detail how the IPC functionality is provided by message queues.



Model Question Paper
B.Sc 5th Semester
INTRUSION DETECTION & PREVENTION SYSTEMS

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. What is Ips and Ids?
2. What are the types of Ids?
3. What is WinPcap?
4. Demonstrate ACID.
5. How can we block an attack in real time, in Snort
6. How to listen in from a hub by Snort, without showing up on the network
7. What characterizes Snort tool for managing numerous Snort sensors in a distributed environment ?
8. What are types of Rules in snort?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9.a. Explain Host based Ids in detail.

OR

b. Discuss the features of Ips.

10 . Demonstrate Ips functions.

OR

b. Write the techniques of Intrusion analysis.

11. What are the steps required to snort installation.

OR

b .Explain the snort command line options.

12.) Discuss the snort rules and headers.

OR

b. Explain snort tool using My-SQL

13.a. Explain ACID analysis in Snort tool.

OR

b. Demonstrate the architecture of IDs and IPs

BACHELOR OF COMPUTER APPLICATIONS
Semester –V MACHINE LEARNING USING PYTHON

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. Mention the reason for python is the best for machine learning?
2. What is machine Learning and types of machine learning explain?
3. Explain about Data quality and data preprocessing?
4. Explain evaluating the performance of a model?
5. How would you evaluate a logistic regression model?
6. Explain about Apriori algorithm?
7. Application of Unsupervised Learning,?
8. Explain about Boosting and bagging?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9a.What is Machine Learning? Life cycle of Machine Learning?
Or
b.What is Human learning? Explain types of human learning.
- 10a.Explain about supervised learning with an example and its representation?
Or
b. Explain about Feature Transformation, Feature Subset Selection.
- 11a.What is Bayesian theorem explain in detail.
Or
b. Explain about multiple linear regression model with an example.
- 12a.Define classification? Explain about KNN in detail with an example?
Or
b. Explain about Support Vector Machine with an example?
- 13a.Define Clustering? Explain about an Clustering Technique with an example?
Or
b. Illustrate about DBSCAN in detail?

BACHELOR OF COMPUTER APPLICATIONS

Semester –V DIGITAL IMAGING

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. Explain about types of graphics?
2. Illustrate about Image window and list its menu?
3. Explain about concept of opening files and Rotating?
4. List different operations on layers?
5. Write about Filling with patterns and gradients
6. Explain about Importing brushes or gradients ?
7. Write a note on Hue and Saturation?
8. Note on Blurring with Gaussian Blur?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9a.Explain about different types of Objects and its formats in detail any three?

Or

b. Define Image scanner ? Explain different types of Image scanner in details?

2a.Define Dialog and explain its layers and tools?

Or

b. What is GIMP .explain GIMP tool box window?

3a.Explain about Cropping, Brightening and Darkening of a digital photo in detail?

Or

b.Explain about Fixing red eye and Sharpening the photo in detail?

4a. Explain about Drawing lines and curves, Changing colours and brushes , Erasing ,Drawing rectangles,

Or

b. Explain about Selection: Working with selections, Select by colour and fuzzy , Select Bezier path?

5a. Explain about the concept of Erasing and Touching Up for Sharpening using convolve tool, Blurring with Gaussian Blur ,Correcting Colour Balance?

Or

b. Explain about the concept of filters in detail?

BACHELOR OF COMPUTER APPLICATIONS

Semester –V Course: CYBER SECURITY AND MALWARE ANALYSIS

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is cyber, cyber-crime and cyber-security?
2. Explain about Networking devices: router, bridge, switch?
3. What is NIST Cyber security framework and its features?
4. What is OWASP? Write about its vulnerabilities any two?
5. What is malware? Explain any two of its types?
6. Note on firewall and Antivirus?
7. Note on network intrusion detection?
8. Write about weak areas of f IT ACT 2000?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9a. Define Computer Network and illustrate its OSI Reference model?

(or)

b. Difference between OSI and TCP/IP?

10a. What is NIST Cyber security framework and Features of NIST Cyber security framework?

(or)

b. illustrate about Turning the NIST Cybersecurity Framework into Reality/ implementing the framework?

11a. explain about OWASP Juice Shop and Web application firewall?

(or)

b. What is OWASP? Explain OWASP Top 5 Vulnerabilities?

12a. Explain about Network instruction dection systems in detail?

(or)

b. Illustrate about Malware analysis ,at least 4 concepts ?

13a. write about the Cybercrime and the legal landscape around the world and Indian IT ACT 2000 --Cybercrime and Punishments.

(or)

b. write about Challenges to Indian law and cybercrime scenario in India and Amendments of the Indian IT Act?



Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following Questions

1. Explain about Smart Health using IoT?
2. Write a note on smart parking IOT application using figure.?
3. Write about design principles and needed capabilities of IOT
4. Write a note on IOT reference model..
5. Explain about Functional view of IoT?
6. Explain about Information view of IoT?
7. Write about eHealth IOT applications?
8. IoT for Smart factory explain?

SECTION-B (10 X 5 = 50 Marks)

Answer the following

9a. Define IOT? Explain Characteristics and component of IOT and advantages of IoT?

(or)

b. Write about various application areas of IoT and Time for Convergence for IoT?

10a. write about M2M Value Chains. and IoT architecture outline with diagram in detail?

(or)

b. Explain about I-GVC using its figure and Global Value Chain in detail?

11a. Illustrate about IOT reference model and IOT function view?

(or)

b. write about IoT Domain Model and Open Geospatial Consortium Architecture with a diagram.

12a. illustrate about how shopping basket can tell: IoT for retailing industry. And four aspects in your business to master IoT.

(or)

b. what are the Needs of IoT for Oil and Gas Industry and create from big data and serialization?

13a. write about GAMBAS adaptive middleware and smarties approach for IoT?

(or)

b. Explain about security, privacy and trust in IoT-Data-Platforms for smart cities?

BACHELOR OF COMPUTER APPLICATIONS
Semester –V MOBILE APPLICATION DEVELOPMENT

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. Define Android and its advantages?
2. Note on Android sdk?
3. Explain about table layout, relative layout?
4. Write a note on text view?
5. Note on grid view, image view?
6. Write about time and date picker?
7. Explain Alarm Clock Application?
8. Write about Web Browsing & device location?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9a. Introduction to Android ,open headset alliance, Android Ecosystem and Need of Android?

(or)

b. Explain about Android architecture? and its Tools and software required for developing an Application?

10a. write about operating system, java JDK, Android SDK and Android development tools?

(or)

b. Explain about Android virtual devices and steps to install and configure Android studio and sdk?

11a. Explain about control flow, directory structure and components of a screen in detail?

(or)

b. Explain about fundamental UI design and linear layout, absolute layout in detail?

12a.write about android platform services and android security model?

(or)

b. write about Applications development in creating small application in detail?

13a. Explain about Application Coding ,Programming Basics & Dialog, in detail?

(or)

b. write about Audio & Video and Drawing Application , File, Game in detail?

COMPUTER APPLICATIONS

Semester – V Course PC HARDWARE AND NETWORKING

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. Define Computer Network with a Diagram containing necessary components?
2. Explain about KB,MB,GB and their relation?
3. Note on TB,PB,EB,ZB?
4. Write about Defragmentation?
5. Explain about Function of LAN Tools any three?
6. Write about Mesh Topology in detail with an example?
7. Note on FTP?
8. Explain about ARP?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9a. Explain about Block Diagram of computer , Classification of computer , Characteristics of Computers?
(or)

b. what is Computer Software, Explain their Types of Software with Example in detail?

10a.Explain about different operating systems?

(or)

b. Explain about Computer Management, Disk Management, Defragmentation?

11a. Write about OSI Reference Model?

(or)

b. Write about Network Topologies?

12a.Difference between Ipv4 and Ipv6?

(or)

b. Explain about TCP/IP Addressing Scheme and Components of IP Address and classes?

13a.Explain about Hyper Text Transfer Protocol(HTTP) ?

(or)

b. Explain about SNMP in detail?



Model Question Paper
B.Sc(Hons) 5th Semseter

Web Interface Designing Technologies

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. How to create table in HTML.
2. What is the use of Audio and video elemnets.
3. What is DHTML.
4. What id the use of wordpress.
5. Define list tag with an example.
6. Define anchor tag with an example
7. What is date object in javascript?
8. What is the use of plugin.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. Difference between web applications and Desktop applications

OR

- b. Explain the structure of the HTML webpage with an example.

- 10 . Explain the types of style sheets.

OR

- b. Define Form tag. Design a Registration page by using all Form controls.

11. What is the need of scripting languages in web Technologies.

OR

- b . Build a JavaScript program to convert temperature from Celsius to Fahrenheit and vice versa

12.) What are some of the essential features of WordPress?

OR

- b. How to work with widgets and menus in wordpress.

- 13.a. Can you create custom post types In WordPress? Explain

OR

- b. How to increase WordPress website security?



Model Question Paper
B.Sc(Hons) 5th Semester

Web Applications Development using PHP & MYSQL

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. How to start and finish a PHP block of code?
2. What is the use of substr() function in PHP?
3. What are Cookies ?
4. Define GET and POST methods
5. State the use of "\$" sign in PHP
6. What is a PHP file.
7. How to insert image using PHP function.
8. What is the purpose of update command?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. . How to Include PHP in a Web Page?

OR

- b. Explain the different types of functions in PHP.

- 10 How do you declare and initialize an array in PHP?

OR

- b. What are associative arrays in PHP?

11. What is cookie? Give example in PHP

OR

- b . Create Website Registration Form using text box, check box, radio button, select, submit button.
And display user inserted value in new PHP page.

12.) Create a program to work with files in PHP.

OR

- b. Write a program to work with images in PHP.

- 13.a. Write a PHP script to connect MySQL server from your website.

OR

- b. Demonstrate MySQL commands to work with tables.



Model Question Paper
B.Sc(Hons) 5th Semester
INTERNET OF THINGS

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. Why do IoT Systems have to be Self-adapting and self-configuring?
2. Define RFID and BLE.
3. Define AMPQ and CoAP.
4. What is the significance of analyzing the data generated by IoT application?
5. Write about Nimbits
6. What is XBEE radio?
7. Differentiate between sensors and actuators.
8. What is a wireless sensor network?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. What are the main challenges of an Internet of Things (IoT)?

OR

- b. How does M2M communication work? Explain

10. What are the different types of Sensors used in IoT Network?

OR

- b. Discuss RFID Principles and components

11. Explain about 6LowPAN.

OR

- b. Explain the architecture of Zigbee

12.) Demonstrate the working of Analog and Digital Sensors.

OR

- b. Draw the diagram of Arduino Uno Architecture.

- 13.a. Design APP using Blink App or Things peak API and connect it LED bulb

OR

- b. Demonstrate the Cloud Based Platforms.



Model Question Paper
B.Sc(Hons) 5th Semester

APPLICATION DEVELOPMENT USING PYTHON

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. Explain input function
2. What happens if a semicolon (;) is placed at the end of a Python statement?
3. Why is * called string repetition operator?
4. What Is an Exception.
5. Write the uses of Thread module.
6. How to use python in network programming.
7. Define DBAPI.
8. What are the features of tuple data structure?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9.a. Describe the features of Python.

OR

b. What is a tuple? How literals of type tuple are written?

10 . How to create a user defined exceptions? Explain.

OR

b. List out the types of Modules and Explain any two types in detail..

11. What is multithreading? Discuss about starting a new thread.

OR

b . Difference between Thread and Processes with example program

12.) How to build a CGI application in python.

OR

b. Implement a program by using Thread module.

13.a. Design a simple database application that stores the records and retrieve the same

OR

b. Demonstrate ORM.

Model Question Paper
B.Sc(Hons) 5th Semester
DATA SCIENCE

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is Data Science.
2. Differentiate the list and dictionary data types of python.
3. What is meant by Correlation.
4. Why we need JSON data.
5. What is machine learning .
6. Explain CNN.
7. Discuss Clustering.
8. What are the types of supervised learning techniques.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. Explain linear algebra operations on vectors and matrices.

OR

- b. What are the different ways to visualize the data.

- 10 . Demonstrate Bayes's Theorem

OR

- b. Explain Gradient Descent concept in detail.

11. What is Dimensionality Reduction.

OR

- b . What are the different types Feature Extraction and Selection Techniques.

12.) How to work with Naive Bayes algorithm.

OR

- b.Explain Multiple Regression technique.

- 13.a. Demonstrate SVM and Random forest algorithm

OR

- b. What is Clustering.Explain the different types of clustering techniques.

Model Question Paper
B.Sc(Hons) 5th Semester
Python for Data Science

Max marks : 75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)
Answer any FIVE of the following

1. What is Data Science.
2. Differentiate the list and dictionary data types of python.
3. What is meant by Self variable.
4. What is Anonymous function.
5. Explain range() function with suitable examples.
6. List the features of matplotlib.
7. Discuss numpy array.
8. What is Data Frame.

SECTION-B (10 X 5 = 50 Marks)
Answer the following Questions

- 9.a. Explain functions in python with an example.
OR
- b. What is an Identifier. Define the rules for Identifier.
10. Write a python program to define Exception Handling.
OR
- b. Explain classes and inheritance concept in detail.
11. Explain Manipulation of NumPy arrays- Indexing, Slicing, Reshaping, Joining and Splitting.
OR
- b. What are the Computation on NumPy arrays using Universal Functions and Mathematical method.
12.) Write a python program to read data from a text file using pandas library
OR
- b. Explain Manipulation of Pandas arrays- Indexing, Selection and Filtering.
- 13.a. Explain the type of plots that can be drawn using matplotlib.
OR
- b. Explain pie chart plot with appropriate examples.

REVISED UG SYLLABUS UNDER CBCS
(Implemented from Academic Year 2020-21)
PROGRAMME: FOUR YEAR B.Sc. (Hons)

Domain Subject: **B.Sc -Data Science**
Skill Enhancement Courses (SECs) for Semester V, from 2022-23 (Syllabus/Curriculum)
Pair Options of SECs for Semester-V

(To choose one pair from the five alternate pairs of SECs)

Univ. Code	Courses 6&7	Name of Course	Th. Hrs. / Week	IE Marks	EE Marks	Credits	Prac. Hrs./ Wk	Marks	Credits
	6A	DATA ANALYTICS WITH TABLEAU	3	25	75	3	3	50	2
	7A	AI CONCEPTS AND TECHNIQUES WITH PYTHON	3	25	75	3	3	50	2
OR									
	6B	SUPERVISED ML WITH PYTHON	3	25	75	3	3	50	2
	7B	UNSUPERVISED ML WITH PYTHON	3	25	75	3	3	50	2
OR									
	6C	NLP WITH PYTHON	3	25	75	3	3	50	2
	7C	DEEP LEARNING NEURAL NETWORKS WITH PYTHON	3	25	75	3	3	50	2

Note-1: For Semester-V, for the domain subject DATA SCIENCE, any one of the three pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C. The pair shall not be broken (ABC allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate field skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the field skills embedded in the syllabus citing related real field situations.

VTH SEMESTER
SKILL ENHANCEMENT COURSES

SKILL ENHANCEMENT COURSE-I

- | | |
|---------------------------------|---|
| 6A. DATA ANALYTICS WITH TABLEAU | --- DATA ANALYTICS
WITH TABLEAU LAB |
| 7A. AI CONCEPTS
WITH PYTHON | --- AI CONCEPTS AND TECHNIQUES
WITH PYTHON LAB |

SKILL ENHANCEMENT COURSE-II

- | | |
|--------------------------------|---------------------------------------|
| 6B.SUPERVISED ML WITH PYTHON | -- SUPERVISED ML WITH PYTHON
LAB |
| 7B.UNSUPERVISED ML WITH PYTHON | -- UNSUPERVISED ML WITH
PYTHON LAB |

SKILL ENHANCEMENT COURSE-III

- | | |
|--|---|
| 6C. NLP WITH PYTHON | -- NLP WITH PYTHON LAB |
| 7C. DEEP LEARNING NEURAL
NETWORKS WITH PYTHON | -- DEEP LEARNING NEURAL
NETWORKS WITH PYTHON LAB |

Semester-wise Revised Syllabus under CBCS, 2020-21

Four Year B.Sc. (Hons) - Semester – V (from 2022-23)

Subject: **B.Sc -Data Science**

Course-6A: **Data Analytics with Tableau**

(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50)

Learning Outcomes

Students at the successful completion of the course will be able to:

1. Understand Big Data and its usage
2. Identify various Data Quality and Preprocessing methods
3. Learn different Clustering techniques and Frequent Pattern Mining
4. Understand Regression, Classification and additional Predictive Methods

Syllabus: (Total Hours: 90 including Teaching, Lab and internal exams, etc.)

UNIT I

Introduction to Data Analytics: Big Data and Data Science, Big Data Architectures, A Short Taxonomy of Data Analytics, Examples of Data Use, History on Methodologies for Data Analytics.

Descriptive Statistics: Scale Types, Descriptive Univariate Analysis, Descriptive Bivariate Analysis.

UNIT II

Descriptive Multivariate Analysis: Multivariate Frequencies, Multivariate Data Visualization, Multivariate Statistics, Infographics and Word Clouds.

Data Quality and Preprocessing: Data Quality, converting to a Different Scale Type, Converting to a Different Scale, Data Transformation, Dimensionality Reduction.

UNIT III

Clustering: Distance Measures, Clustering Validation, Clustering Techniques.

Frequent Pattern Mining: Frequent Itemsets, Association Rules, Behind Support and Confidence, Other Types of Pattern.

UNIT IV

Regression: Predictive Performance Estimation, Finding the Parameters of the Model, Technique and Model Selection.

Classification: Binary Classification, Predictive Performance Measures for Classification, Distance-based Learning Algorithms, Probabilistic Classification Algorithms.

UNIT V

Additional Predictive Methods: Search-based Algorithms, Optimization-based Algorithms.

Advanced Predictive Topics: Ensemble Learning, Algorithm Bias, Non-binary Classification Tasks, Advanced Data Preparation Techniques for Prediction.

III Text Books:

1. "A General Introduction to Data Analytics" by João Mendes Moreira, André C. P. L. F. de Carvalho, TomášHorváth, 2019 Edition, Wiley Publications.
2. "Data Analytics: Principles, Tools and Practices" by Dr. Gaurav Aroraa, ChitraLele, Dr. Munish Jindal, 2022 Edition, pbp publications
3. "Data Analytics" by Anil Maheshwari, First Edition, McGraw Hill Education

IV 6A (L): DATA ANALYTICS WITH TABLEAU LAB

OBJECTIVES:

To implement Map Reduce programs for processing big data

To realize storage of big data using H base, Mongo DB

To analyze big data using linear models

To Analyse big data using machine learning techniques such as SVM / Decision tree classification and clustering

LIST OF EXPERIMENTS

Hadoop

1. Install, configure and run Hadoop and HDFS
2. Implement word count / frequency programs using MapReduce
3. Implement an MR program that processes a weather dataset

R

4. Implement Linear and logistic Regression
5. Implement SVM / Decision tree classification techniques
6. Implement clustering techniques
7. Visualize data using any plotting framework
8. Implement an application that stores big data in Hbase / MongoDB / Pig using Hadoop / R.

III Text Books:

1. "A General Introduction to Data Analytics" by João Mendes Moreira, André C. P. L. F. de Carvalho, TomášHorváth, 2019 Edition, Wiley Publications.
2. "Data Analytics: Principles, Tools and Practices" by Dr. Gaurav Aroraa, ChitraLele, Dr. Munish Jindal, 2022 Edition, pbp publications
3. "Data Analytics" by Anil Maheshwari, First Edition, McGraw Hill Education

MODEL QUESTION PAPER (Sem-end. Exam)

B. Sc DEGREE EXAMINATION

SEMESTER –V

Course 6A: Data Analytics with Tableau

Time:3Hrs

Max.marks:75

Section – A

(Answer any five of the following)

5x5=25M

1. Write about natural taxonomy that exists in data analytics.
2. What are the multivariate frequencies?
3. Write about Clustering Validation.
4. Explain about simple linear regression model.
5. Write about Random Forests.
6. Write about Two Quantitative Attributes with an example.
7. Write about missing values in the data set.
8. Explain about Eclat

SECTION-B

5X10=50M

9. Explain about The CRISP-DM Methodology.

(OR)

Explain about Univariate Data Visualization.

10. Explain about Multivariate Data Visualization.

(OR)

Explain about Converting data in a scale to another scale of the same type.

11. Finite about Distance Measures for Non-conventional Attributes.

(OR)

Explain about Apriori – a Join-based Method.

12. Explain about Predictive Performance Measures for Regression.

(OR)

Explain about binary classification.

13. Explain about back propagation in MLP.

(OR)

Explain about Algorithm Bias.

Semester-wise Revised Syllabus under CBCS, 2020-21

Four Year B.Sc. (Hons) - Semester – V (from 2022-23)

Subject: **B.Sc -Data Science**

Course-7A: **AI Concepts and Techniques with Python**

(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50)

Objectives of Course (AI Concepts and Techniques with Python):

This course provides an introduction to the fundamentals of artificial intelligence. Demonstrates fundamental understanding of the history of artificial intelligence (AI) and its foundations. Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. Demonstrates awareness and a fundamental understanding of various applications of AI techniques in intelligent Agents.

Learning outcomes of Course:

1. List the objectives and functions of modern Artificial Intelligence.
2. Categorize an AI problem based on its characteristics and its constraints.
3. Understand and implement search algorithms.
4. Learn how to analyze the complexity of a given problem and come with suitable optimizations.
5. Demonstrate practical experience by implementing and experimenting with the learnt algorithms.

Syllabus: (Total Hours: 90 including Teaching, Lab and internal exams, etc.)

UNIT- 1

Problems and Search: What is Artificial Intelligence, The AI Problems, and Underlying Assumption, what is an AI Technique.

Problems, Problems Spaces, and Search: Defining the problem as a state space search, production systems, problems characteristics, issues in the design of search programs.

UNIT- II

Heuristic Search Techniques: Generate-and-test, Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction, Means-Ends Analysis

UNIT- III

Knowledge Representation Issues: Representations and Mapping, Approaches to Knowledge Representation, The frame problem. Using Predicate Logic: Representing simple facts in logic, Representing Is-a relationships, predicates, Resolution

UNIT- IV

Representing Knowledge using Rules: Procedural Vs Declarative knowledge, Logic Programming, Forward Vs Backward Reasoning, Matching, Control Knowledge

UNIT- V

Symbolic Reasoning under Uncertainty: Introduction to Non-monotonic Reasoning, Logics for Non-monotonic Reasoning, Implementation issues, Augmenting a Problem solver, implementation: DFS, BFS.

Statistical Reasoning: Probability and Bayes Theorem, Certainty Factors and Rule-Based Systems, Bayesian Networks, Dempster-Shafer Theory.

III Textbooks:

Artificial Intelligence, Second Edition, Elaine Rich, Kevin Knight, Tata McGraw-Hill Edition.

References:

Russell, S., & Norvig, P. Artificial intelligence: a modern approach. Third Edition. Pearson new international edition. 2014.

IV Details of Lab/Practical/Experiments/Tutorials syllabus:

7A (L): AI Concepts and Techniques with Python Lab

1. Write a Program to Implement Breadth First Search using Python.
2. Write a Program to Implement Depth First Search using Python.
3. Write a Program to Implement Tic-Tac-Toe game using Python.
4. Write a Program to implement 8-Puzzle problem using Python.
5. Write a Program to Implement Water-Jug problem using Python.
6. Write a Program to Implement Travelling Salesman problem using Python.
7. Write a Program to Implement Towers of Hanoi problem using Python.
8. Write a Program to implement 8-Queens problem using Python.

MODEL QUESTION PAPER (Sem-end. Exam)

B. Sc DEGREE EXAMINATION

SEMESTER –V

Course 7A: AI Concepts and Techniques with Python

Time:3Hrs

Max.marks:75

SECTION-A

(Answer any five of the following)

5x5=25M

- 1) What is AI Technique?
- 2) Define State space search
- 3) Explain Generate and test
- 4) What is heuristic search technique?
- 5) What is resolution?
- 6) Explain Uncertainty implementation issues
- 7) Explain Bayes Theorem
- 8) Define Dempster-Shafer Theory.

SECTION-B

5X10=50M

- 9) a) Define Artificial Intelligence. Applications and characteristics of AI.
(or)

b) Explain the state space representation of Water – Jug problem.

- 10) a) Define Heuristic search? What are the advantages of Heuristic search?
(or)

b) Describe the Hill climbing.

- 11) a) What is predicate logic? Explain the predicate logic representation with reference to suitable example.

(or)

b) Describe the approaches to Knowledge Representation and explain the Issues in Knowledge Representation

- 12) a) Explain Procedural Vs Declarative knowledge
(or)

b) Explain the Issues in Knowledge Representation. Write notes on control knowledge.

- 13) a) Show how to implement Non-monotonic reasoning using JTMS in medical diagnosis. Consider rules such as "If you have a runny nose, assume you have a cold unless it is Allergy season."

(or)

b) Explain logics for Non-monotonic reasoning and discuss the implementation issues.

Semester-wise Revised Syllabus under CBCS, 2020-21

Four Year B.Sc. (Hons) - Semester – V (from 2022-23)

Subject: **B.Sc -Data Science**

Course-6B: **Supervised ML with Python**

(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50)

Objectives of Course:

The purpose of this course is to serve as an introduction to Supervised machine learning with Python. We will explore several classifications, regression algorithms and see how they can help us perform a variety of Supervised machine learning tasks.

Learning outcomes of Course:

- Able to understand introduction to machine learning concepts.
- Able to Loading datasets, build models and model persistence.
- Understand Feature extraction from data sets.
- Able to do Regression & Classification.
- Able to compare SVM with other classifiers.

Syllabus: (Total Hours: 90 including Teaching, Lab and internal exams, etc.)

UNIT- 1

Machine Learning Basics: What is machine learning? Key terminology, Key tasks of machine learning, How to choose right algorithm, steps in developing a machine learning, why python? Getting started with Numpy library

Classifying with k-Nearest Neighbors: The k-Nearest Neighbors classification algorithm, Parsing and importing data from a text file, Creating scatter plots with Matplotlib, Normalizing numeric values

UNIT- II

Splitting datasets one feature at a time-Decision trees: Introducing decision trees, measuring consistency in a dataset, using recursion to construct a decision tree, plotting trees in Matplotlib

UNIT- III

Classifying with probability theory-Naïve Bayes: Using probability distributions for classification, learning the naïve Bayes classifier, Parsing data from RSS feeds, using naïve Bayes to reveal regional attitudes

UNIT- IV

Logistic regression: Classification with logistic regression and the sigmoid function, Using optimization to find the best regression coefficients, the gradient descent optimization algorithm, Dealing with missing values in the our data

UNIT- V

Support vector machines: Introducing support vector machines, using the SMO algorithm for optimization, using kernels to "transform" data, Comparing support vector machines with other classifiers

III Textbooks:

Machine learning in action, Peter Harrington by Manning publications

IV Lab Experiments

6B (L): Supervised ML with Python LaB

1. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.
2. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.
3. Write a program to demonstrate the working of the decision tree based ID3 algorithm.
4. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a CSV file.
5. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
6. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
7. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.
8. Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points.
Select appropriate data set for your experiment and draw graphs.

MODEL QUESTION PAPER (Sem-end. Exam)

B. Sc DEGREE EXAMINATION

SEMESTER –V

Course 6B: Supervised ML with Python

Time:3Hrs

Max.marks:75

SECTION-A

(Answer any five of the following)

5x5=25M

1. What is Machine Learning? Discuss its key terminology.
2. How to Normalize numeric values.
3. What is Decision tree? Explain.
4. Discuss how to reveal regional attributes.
5. Explain Logistic Regression
6. Define Support Vector Machine.
7. How to deal with missing values.
8. List some of the Numpy library functions.

SECTION-B

Answer all the questions. Each question carries 10 marks

5X10=50M

9. A) Discuss the steps in developing Machine Learning.
(OR)
B) Discuss k-Nearest Neighbours classification algorithm.
10. A) How to construct a decision tree.
(OR)
B) What are the steps for plotting trees in Matplotlib.
11. A) What is Classification ? Discuss naïve Bayes classifier.
(OR)
B) What is Parsing? How to Parse data from RSS feeds.
12. A) Discuss classification with logistic regression and the sigmoid function.
(OR)
B) Discuss gradient descent optimization algorithm.
13. A) Comparing support vector machines with other classifiers.
(OR)
B) Discuss SMO algorithm for optimization

Semester-wise Revised Syllabus under CBCS, 2020-21

Four Year B.Sc. (Hons) - Semester – V (from 2022-23)

Subject: **B.Sc -Data Science**

Course-7B: **Unsupervised ML with Python**

(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50)

I Aim and objectives of Course (Unsupervised ML with Python):

Unsupervised Machine Learning involves finding patterns in datasets. The core of this course involves study of Clustering, feature extraction and optimization algorithms. The purpose of this course is to serve as an introduction to machine learning with Python.

Learning outcomes of Course:

- Able to do Clustering, feature extraction and optimization.
- Students will be able to understand and implement in Python algorithms of Unsupervised Machine Learning and apply them to real-world datasets.

II Syllabus: (Total Hours: 90 including Teaching, Lab and internal exams, etc.)

UNIT- 1

Unsupervised Learning: Clustering: k-means clustering algorithm, Improving cluster performance with post processing, Bisecting k-means, Example: clustering points on a map

UNIT- II

Association analysis : Apriori algorithm: Association analysis, The Apriori principle, Finding frequent item sets with the Apriori algorithm, Mining association rules from frequent item sets, uncovering patterns in congressional voting

UNIT- III

Finding frequent item sets: FP-growth –FP trees, Build FP-tree, mining frequent from an FP-tree, finding co-occurring words in a Twitter feed, mining a click stream from a news site.

UNIT- IV

Principal component analysis: Dimensionality reduction techniques, using PCA to reduce the dimensionality of semiconductor manufacturing data

UNIT- V

Singular value decomposition: Applications of the SVD, Matrix factorization, SVD in Python, Collaborative filtering-based recommendation engines, a restaurant dish recommendation engine

III Text Books:

Machine learning in action, Peter Harrington by Manning publications

IV Lab Experiments

7B (L): Unsupervised ML with Python

1. Implementation of K-Means Clustering
2. Implement the bisecting k-means clustering algorithm
3. Implement Apriori algorithm
4. Implement Association rule-generation functions
5. Implement FP-tree creation
6. Write a function to find all paths ending with a given item.
7. Implement Code to access the Twitter Python library
8. Implement the PCA algorithm
9. Write a program to find Rating estimation by using the SVD
10. Implement Image-compression functions using SVD

Text Books:

Machine learning in action, Peter Harrington by Manning publications

MODEL QUESTION PAPER (Sem-end. Exam)

B. Sc DEGREE EXAMINATION

SEMESTER –V

Course 7B: Unsupervised ML with Python

Time:3Hrs

Max.marks:75

Section – A

Answer any 5 Questions. Each Question Carries 5 marks

5 X 5 = 25

1. What is Unsupervised Learning.
2. Define Clustering.
3. What is Associative analysis.
4. How to mine a click stream from a news site.
5. Explain mining frequent from an FP-tree
6. What are Dimensionality reduction techniques.
7. List Applications of the SVD.
8. Explain Matrix factorization.

Section – B

Answer all the questions. Each question carries 10 marks

5 X 10 = 50

9. a) Discuss k-means clustering algorithm.
(OR)
b) How to improve cluster performance with post processing.
10. a) Explain Apriori algorithm along with its principles.
(OR)
b) Discuss Mining association rules from frequent item sets.
11. a) Define Finding frequent item sets: FP-growth –FP trees, Build FP-tree
(OR)
b) List out steps to find co-occurring words in a Twitter feed
12. a) Discuss Principal component analysis to reduce dimensionality.
(OR)
b) How PCA is used to reduce the dimensionality of semiconductor manufacturing data
13. a) Discuss how Singular value decomposition(SVD) is implemented in Python.
(OR)
b) Discuss Collaborative filtering-based recommendation engines.

Semester-wise Revised Syllabus under CBCS, 2020-21



Four Year B.Sc. (Hons) - Semester – V (from 2022-23)

Subject: **B.Sc -Data Science**

Course-6C: **NLP with Python**

(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50)

Objectives of Course:

This course introduces the fundamental concepts and techniques of natural language processing (NLP). Students will gain an in-depth understanding of the computational properties of natural languages and the commonly used algorithms for processing linguistic information. The course examines NLP models and algorithms using both the traditional symbolic and the more recent statistical approaches.

Learning outcomes of Course:

- Able to describe the fundamental concepts and techniques of natural language processing.
- Ability to distinguish among the various techniques, taking into account the assumptions, strengths, and weaknesses of each.
- Use appropriate descriptions, visualizations, and statistics to communicate the problems and their solutions.
- Analyze large volume text data generated from a range of real-world applications.
- Understanding semantics and pragmatics of English language for processing
- Writing programs in Python to carry out natural language processing

II. Syllabus: (Total Hours: 90 including Teaching, Lab and internal exams, etc.)

UNIT I

Natural Language Processing: What is NLP? NLP and linguistics -Syntax and semantics, Pragmatics and context, Two views of NLP, Tasks and super tasks. Linguistic tools- Sentence delimiters and tokenizers, Stemmers and taggers, Noun phrase and name recognizers, Parsers and grammars.

UNIT II

Document Retrieval: Information retrieval, Indexing technology Query processing: Boolean search, Ranked retrieval, Probabilistic retrieval, Language modeling Evaluating search engines: Evaluation studies Evaluation Metrics Relevance Judgments Total system evaluation

Attempts to enhance search performance: Table of contents Query expansion and thesauri, Query expansion from relevance information

UNIT III

Information extraction: The Message Understanding Conferences, Regular expressions Finite automata in FASTUS: Finite State Machines and regular languages, Finite State Machines as parsers Pushdown automata and context-free grammars: Analyzing case reports Context free grammars Parsing with a pushdown automaton, Coping with incompleteness and ambiguity

UNIT IV

Text categorization: Overview of categorization tasks and methods , Handcrafted rule based methods Inductive learning for text classification : Naïve Bayes classifiers , Linear classifiers, Decision trees and decision lists Nearest Neighbor algorithms Combining classifiers : Data fusion, Boosting, Using multiple classifiers

UNIT V

Text mining: What is text mining? Reference and coreference, Named entity recognition, The coreference task, Automatic summarization: Summarization tasks, Constructing summaries from document fragments, Multi-document summarization (MDS) Testing of automatic summarization programs: Evaluation problems in summarization research, Building a corpus for training and testing.

III Text Books:

1. Natural Language Processing for Online Applications, Text Retrieval Extraction & Categorization. Peter Jackson, Isabelle Moulinier, Thomson Legal & Regulatory

IV List of Experiments

6C(L): NLP with Python Lab

1. INSTALLATION
2. WORD TOKENIZER
3. SENTENCE TOKENIZER
4. PARAGRAPH TOKENIZER
5. PROBABILISTIC PARSING
6. PROBABILISTIC CONTEXT FREE GRAMMER
7. LEARNING GRAMMAR
8. CONDITIONAL FREQUENCY DISTRIBUTIONS
9. LEXICAL ANALYSER
10. WORDNET
11. CONTEXT FREE GRAMMAR
12. LARGE CONTEXT FREE GRAMMAR AND PARSING
13. NAMED ENTITY RECOGNITION

TEXT BOOKS:

1. Natural Language with Python, Steven Bird and O'Reilly , First Edition.

MODEL QUESTION PAPER (Sem-end. Exam)

B. Sc DEGREE EXAMINATION

SEMESTER –V

Course 6C: NLP with Python

Time:3Hrs

Max.marks:75

Section – A

Answer any 5 Questions. Each Question Carries 5 marks

5 X 5 = 25

1. What is NLP? Explain its syntax and semantics.
2. Discuss two views of NLP.
3. Explain how information is retrieved.
4. Discuss Finite State Machines.
5. Discuss Parsing with Pushdown Automata.
6. What are Handcrafted rule based methods.
7. What is Text mining? Explain.
8. Discuss Multi-document summarization (MDS).

Section – B

Answer all the questions. Each question carries 10 marks

5 X 10 = 50

9. a) Discuss Linguistic tools in detail.

(OR)

- b) What are the existing Parsers and grammars in NLP? Explain.

10. a) Explain methods in Indexing Technology Query processing.

(OR)

- b) Discuss in detail about Language modeling Evaluating search engines.

- 11 a) Finite State Machines as parsers Pushdown automata Discuss.

(OR)

- b) What is Parsing? Explain Context free grammars Parsing with a pushdown automaton.

12. a) Discuss Text categorization tasks and methods.

(OR)

- b) What is Naive Bayes algorithm? When we can use this algorithm in NLP?

13. a) Discuss the tasks involved in Automatic summarization.

(OR)

- b) How Testing of automatic summarization programs done explain.

Semester-wise Revised Syllabus under CBCS, 2020-21
Four Year B.Sc. (Hons) - Semester – V (from 2022-23)
Subject: **B.Sc -Data Science**
Course-7C: Deep Learning Neural Networks with Python
(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50)

I Aim and Objectives of Course:

Deep learning has resurged with the availability of massive datasets and affordable computing, enabling new applications in computer vision and natural language processing. This course introduces convolutional, recurrent, and other neural network architectures for deep learning. Students design, implement, and train these models to solve real-world problems.

Learning outcomes of Course:

- Solve problems in linear algebra, probability, optimization, and machine learning.
- The advantages and disadvantages of deep learning neural network architectures and other approaches.
- Implement deep learning models in Python using the PyTorch library and train them with real-world datasets.
- Design convolution networks for handwriting and object classification from images or video.
- Design recurrent neural networks with attention mechanisms for natural language classification, generation, and translation.

II Syllabus: (Total Hours: 90 including Teaching, Lab and internal exams, etc.)

UNIT I

Introduction to Deep Learning: Artificial intelligence, machine learning and deep learning, history of machine learning, Why deep learning? Why now?
The mathematical building blocks of neural networks: A first look at a neural network, Data representations for neural networks, The gears of neural networks: tensor operations, The engine of neural networks: gradient-based optimization.

UNIT II

Getting started with neural networks: Anatomy of a neural network, Introduction to Keras, Setting up a deep-learning workstation, Classifying movie reviews: a binary classification example, Classifying newswires: a multiclass classification example, Predicting house prices: a regression example.
Fundamentals of machine learning: Four branches of machine learning, Evaluating machine-learning models, Data preprocessing, feature engineering and feature learning, Overfitting and underfitting, The universal workflow of machine learning.

UNIT III

Deep learning for computer vision: Introduction to convnets, Training a convnet from scratch on a small dataset, Using a pretrained convnet, Visualizing what convnets learn.

UNIT IV

Deep learning for text and sequences: Working with text data, Understanding recurrent neural networks, Advanced use of recurrent neural networks, Sequence processing with convnets.

UNIT V

Advanced deep-learning best practices: Going beyond the Sequential model: theKeras functional API, Inspecting and monitoring deep-learning models using Keras callbacks and TensorBoard, Getting the most out of your models.

III Text Books:

1. "Deep Learning with Python" by Francois Chollet, , 2018 Edition, Manning Publications.
2. "Deep Learning with Python" by Nikhil Ketkar, JojoMoolayil, Second Edition, Apress.
3. "Python Deep Learning" by Ivan Vasilev, Daniel Slatter, Second Edition, Packt Publications.

IV List of Deep Learning Programs

7C (L): DEEP LEARNING NEURAL NETWORKS WITH PYTHON LAB

1. How to train a network using Keras in Python
2. Write programs to demonstrate Tensor Operations
3. Classifying movie reviews: a binary classification example
4. Predicting house prices: a regression example
5. Demonstrate Convnets by the following tasks
 - i. Instantiating a Convnet
 - ii. Adding classifier on top of the Convnet
 - iii. Training the Convnet on MNIST images
6. Display curves of loss and accuracy during training
7. Word level one-hot encoding (Toy example)
8. Character level one-hot encoding (Toy example)
9. Using Keras for Word level one-hot encoding
10. Word level one-hot encoding with hashing trick

Text Books:

1. "Deep Learning with Python" by Francois Chollet, , 2018 Edition, Manning Publications.

MODEL QUESTION PAPER (Sem-end. Exam)

B. Sc DEGREE EXAMINATION

SEMESTER –V

Course 7C: Deep Learning Neural Networks with Python

Time:3Hrs

Max.marks:75

Section – A

Answer any 5 Questions. Each Question Carries 5 marks

5 X 5 = 25

1. What is Machine Learning?
2. Write about the relationship between network, layers, loss function and optimizer.
3. Explain max pooling operation.
4. Explain about word-level one-hot encoding with example.
5. Write about multi input model.
6. What are the tensor operations?
7. Write about feature engineering for reading the time on a clock.
8. Write how a bidirectional RNN works.

Section – B

Answer all the questions. Each question carries 10 marks

5 X 10 = 50

10. a) Explain how deep learning works in three figures.

(OR)

- b) Explain about Data representations for neural networks.

11. a) Explain about binary classification example.

(OR)

- b) Explain about Four branches of machine learning

12. a) Finite about Data preprocessing.

(OR)

- b) Explain how to plot the results with an example.

13. a) Explain about LSTM and GRU layers.

(OR)

- b) Explain about Combining CNNs and RNNs to process long sequences.

14. a) Explain about Directed acyclic graphs of layer

(OR)

- b) Explain about TensorFlow visualization framework



Model Question Paper
Computer Applications for Arts/Commerce – V Semester
Big data Analytics using R

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is meant by Big Data? Classify the digital data.
2. What are the challenges in Big data?
3. What is meant by data analytics? Write advantages of data science?
4. What is the use of tail() function.
5. What are the advantages of R over other programming languages?
6. Write some functions for data frames?
7. What are the different types of graphs provided by R?
8. What is meant by Web data.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a.Explain briefly-structured, unstructured, and semi-structured data?
OR
b. Differentiate between business intelligence Vs big data.
- 10.a. What are the top challenges facing big data, technologies needed to meet challenges of big data
OR
b. Explain the classification of analytics.
- 11.a. What is R. Write a program for matrix using R Programming language.
OR
b. Explain data types in R programming language?
- 12.a.How to load the data frames and read the data from .CSV files?
OR
b. What are the different types of functions for data frames?
- 13.a. Write a program to import data from csv file and print the data on the console.
OR
b. Explain workings of different types of charts in R with syntax?

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
DATA SCIENCE USING PYTHON

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is meant by data science? Write advantages of data science?
2. What are the different types of looping statements.
3. What are the control structures in python?
4. Explain the features of python?
5. Difference between List and Tuple.
6. What is Anonymous function.
7. What is meant by self variable.
8. How to declare static methods in python.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

- 9.a. What are the advantages of Data Science.
OR
b. What are the responsibilities and qualifications of a data scientist?
- 10.a. Write Python Program to Print the Fibonacci sequence.
OR
b. (a) Explain control statements in python?
(b) Explain looping statements in python?
- 11.a. Explain Strings, Lists, Tuples, Dictionaries in python?
OR
b. Write a Python Program to create a dictionary and print its content.
- 12.a.(a) Distinguish functions and lambda functions?
(b) Explain briefly about functions in python?
OR
b. Write a Python Program to Find Factorial of Number Using Non-Recursion.
- 13.a. Explain briefly about classes and objects? Write a program using classes and objects?
OR
b. Implement a program Student class and its methods.

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
Mobile application development

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. Write any three features of smart phones.
2. What are the android development tools?
3. List any six versions of Android OS.
4. Write about evaluation of smart phones.
5. Define JDK and SDK.
- 6.State UI and UX.
7. Explain the activity life cycle.
8. Define Android Virtual Devices (AVD).

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9.a.Explain Tools and software required for developing an Android Application?

OR

b. What are the features of Android OS.

10.a. Explain steps to install and configure Android studio and sdk

OR

b. Discuss about the anatomy of android application

11.a.Explain the components of the UI design.

OR

b. Explain checkbox and radio button controls with an example program

12.a. Explain the android system architecture?

OR

b. Explain the android platform services.

13.a. Explain the MIT App Inventor?

OR

b. Develop a calculator application.

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
Mobile application development

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is meant by topology.
2. Differentiate between router and switch.
3. What is meant by operating systems? Write some names of operating systems?
4. What is NIST Cyber security framework
5. What are the differences between OSI and TCP/IP?
6. What is OWASP?
7. What is meant by malware and its types?
8. What is meant by Cross-Site Scripting (XSS).

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9.a.Explain networking devices in detail.

OR

b. Explain 1. OSI Reference model 2. TCP/IP model

10.a. What are the Features of NIST Cyber security framework

OR

b. What is NIST Cyber security framework and explain its functions?

11.a.Explain SQL Injection in detail.

OR

b. What is OWASP? Explain the vulnerabilities of OWASP?

12.a. What are the steps to find malware analysis.Explain.

OR

b. Explain the different types and analysis of malware?

13.a. Explain Indian IT ACT 2000 --Cybercrime and Punishments.

OR

b. What are the Challenges to Indian law and cybercrime scenario in India?

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
E-commerce application development

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is the meant by E-commerce?
2. What is B2B marketing?
3. What are the characteristics of internet-based EDI?
4. What is another name of C2B?
5. What are the tags used to design a table.
6. What is the javascript.
7. Why we need Wordpress?
8. What are hyperlinks? Give example.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9. a. What are the Impacts, Challenges & Limitations of E-Commerce?
OR
b. Difference between E-commerce v/s Traditional Commerce.
10. a. What are the influencing factors of successful E-Commerce?
OR
b. Explain Web based E Commerce Architecture.
11. a. Explain the EDI Technology and communications?
OR
b. What is EDI? Explain its types. How they are useful? Give suitable examples.
12. a. Explain the Client Side scripting -JAVA SCRIPT basics
OR
b. Define list. What are its types? Explain how different types of lists are created using HTML.
13. a. Briefly explain the word press site by creating posts and hyperlinks.
OR
b. Explain the steps how to add categories and tags to Word press .

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
REAL TIME GOVERNANCE SYSTEM (RTGS)
Max marks:75
Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is RTGS.
2. What is meant by G2C .
3. Define Internet.
4. What is the use of Data Warehousing.
5. What meant by Cloud Computing.
6. Explain Knowledge Management Systems.
7. Define IT Act 2000.
8. What are the latest Applications in Real Time Governance?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9. a. What are the Type of E-Governance.
OR
b. Explain the issues while implementing the E-Governance?
- 10.a. Discuss Human Infrastructural preparedness.
OR
b. Explain the types of Institutional Infrastructural preparedness?
11. a. Explain the experience of E- Governance all over the world?
OR
b. Explain the experience of E- Governance of India?
- 12.a. Explain the experiences of E-Governance in Kerala?
OR
b. Explain the experiences of E-Governance in Andhra Pradesh?
- 13.a. Briefly explain the applications of Real-time governance in Agriculture.
OR
b. Explain the applications of Real-time governance in Education?

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
Multimedia Tools and Applications

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What are the components of a multimedia system?
2. What is s Multimedia?
3. Explain different types of video signals?
4. Explain the basics of Information Theory?
5. What is sound?
6. Define MPEG Audio.
7. What are different types Video Compression Techniques:
8. Define different audio codec.

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9. a. Explain the technical design issues of multimedia system?
OR
b. Explain Multimedia Production in detail.
- 10.a. Discuss Black & white images .
OR
b. How the color images are represented in the multimedia?
11. a.Explain Pulse code modulation.
OR
b. Explain Predictive coding.
- 12.a. Explain the Lossless Compression Algorithms.
OR
b. Explain the audio compression standards?
- 13.a.Explain the Video compression standard H.261.
OR
b. Demonstrate the Video compression standard MPEG-1.

Model Question Paper
Computer Applications for Arts/Commerce – V Semester
DIGITAL IMAGING

Max marks:75

Time:3hrs

SECTION-A (5 X 5 = 25 Marks)

Answer any FIVE of the following

1. What is Digital Imaging.
2. What are the different types Video formats.
3. What is GIMP?
4. Explain the basics of Information Theory?
5. What is Sharpening.
6. Define Erasing.
7. What are the steps for improving digital photos?
8. How to work of noise filters in digital imaging?

SECTION-B (10 X 5 = 50 Marks)

Answer the following Questions

9. a. Explain the Types of video editing.

OR

- b. Explain the Types of Image Scanners.

- 10.a. Explain GIMP and GIMP toolbox windows?

OR

- b. How the Image window used in GIMP.

11. a.Explain different methods for improving of digital photos?

OR

- b. Explain the layers to improving of digital photos?

- 12.a. Explain the drawing lines and curves in graphic?

OR

- b. How to work with Modifying selections with selection modes in Drawing.

- 13.a.Explain the Erasing and Touching Up used in digital photos.

OR

- b. Explain different types of filters In the digital photos?