

**BOARD OF SECONDARY EDUCATION RAJASTAN AJMER
REVISED SYLLABUS FOR EXAMINATION-2022**

Informatics Practices

CLASS XII

Code No. 04

Unit Wise syllabus

ईकाई नाम	संख्या व	अध्याय व नाम	संख्या	शीर्षक एवं विषय वस्तु	अंक भार
Unit 1: Data Handling using Pandas and Data Visualization		Chapter 2 Data Handling using Pandas - I Chapter 3 Data Handling using Pandas - II		Data Handling using Pandas -I Introduction to Python libraries- Pandas, Matplotlib. Data structures in Pandas - Series and data frames. Series: Creation of series from ndarray, dictionary, scalar value; mathematical operations; series attributes, head and tail functions; selection, indexing and slicing. Data Frames: creation of data frames from dictionary of series, list of dictionaries, text/CSV files, display, iteration. Operations on rows and columns: add add (insert /append) , select, delete (drop column and row), rename, Head and Tail functions, indexing using labels, Boolean indexing; joining, merging and concatenation of data frames. Importing/Exporting Data between CSV files and Data Frames. (for practicals only) Data handling using Pandas – II Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, Standard deviation, variance. Data Frame operations: Aggregation, group by, Sorting, Deleting and Renaming Index, Pivoting. Handling missing values – dropping and filling. Importing/Exporting Data between MySQL database and Pandas.	24
Unit 2: Database Query using SQL		Chapter 1 Querying and SQL Functions		Math functions: POWER (), ROUND (), MOD (). Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM (). Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME (). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.	20
Unit 3: Introduction to Computer Networks		Chapter 5 Internet and Web		Introduction to networks, Types of network: LAN, MAN, WAN. Network Devices: modem, hub, switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh. Introduction to Internet, URL, WWW and its applications- Web, email, Chat, VoIP. Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website. Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.	6

PRACTICAL WORK

S.No.	Unit Name	Marks
1	Programs using Pandas	8
2	SQL Queries	5
3	Practical file (minimum of 15 programs based on Pandas and 15 SQL queries must be included)	5
4	Project Work (using concepts learned in class XI and XII)	7
5	Viva-Voce	5
	Total	30

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Unit 1: Data Handling using Pandas and Data Visualization	Chapter 4 Plotting Data using Matplotlib	Data Visualization : Purpose of plotting, drawing and saving of plots using Matplotlib (line plot, bar graph, histogram, pie chart, frequency polygon, box plot and scatter plot). Customizing plots: color, style (dashed, dotted), width; adding label, title, and legend in plots.
Unit 2: Database Query using SQL	Chapter 1 Querying and SQL Functions	Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN (Cartesian Join, Equi Join, Natural Join)
Unit 4: Societal Impacts	Chapter 6 Societal Impacts	Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act. E-waste: hazards and management. Awareness about health concerns related to the usage of technology

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S.No.	Unit Name
1	Matplotlib
3	5 based on Matplotlib

Prescribed Books :

- 1. Informatics Practices**—NCERT's Book Published under Copyright