BOARD OF SECONDARY EDUCATION RAJASTHAN, AJMER
Syllabus for Board Examination-2024
Class : XIIth
Sub. : Informatic Practices (04)

इस विषय में दो प्रश्नपत्र–सैद्धान्तिक एवं प्रायोगिक की परीक्षा होगी। परीक्षार्थी को दोनों पत्रों में पृथक–पृथक उत्तीर्ण होना अनिवार्य है। परीक्षा योजना निम्नानुसार हैं –

प्रश्नपत्र	समय (घंटे)	प्रश्नपत्र के लिए अंक	सत्रांक	पूर्णांक
सैद्धान्तिक	3:15	56	14	70
प्रायोगिक	3:00	30	0	30

Unit Wise syllabus

ईकाई संख्या व नाम	अध्याय संख्या व नाम	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 Chapter 4 Plotting Data using Matplotlib	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. 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.	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. Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN (Cartesian Join, Equi Join, Natural Join)	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
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	6

PRACTICAL

S.No.	Unit Name	Marks
1	Programs using Pandas and Matplotlib	8
2	SQL Queries	5
3	Practical file (minimum of 20 programs based on Pandas, 5 based on Matplotlib and 20 SQL queries must be included)	5
4	Project Work (using concepts learned in class XI and XII)	7
5	Viva-Voce	5
	Total	**30**

Prescribed Books : 1. Informatics Practices—NCERT's Book Published under Copyright