नेपाल धितोपत्र बोर्ड
अधिकृत तृतीय पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
(सूचना प्रविधि समूह)

विषयगत विवरण

पत्र	विषय	पूर्णांक	उत्तिर्णांक	समय
प्रथम	धितोपत्र तथा वित्तिय बजार सम्बन्धी	१००	४०	३ घण्टा
दोश्रो	सेवा सम्बन्धी	१००	४०	३ घण्टा

प्रथमपत्र (धितोपत्र तथा वित्तिय बजार सम्बन्धी)

१. धितोपत्र बजारको परिभाषा तथा महत्व।
२. नेपालमा धितोपत्र बजारको विकासक्रम तथा वर्तमानअवस्था ।
३. नेपाल धितोपत्र बोर्डको कार्यहरु ।
४. धितोपत्र बिनिमय बजार (Stock Exchange) को कार्यहरु ।
५. धितोपत्र बजारमा धितोपत्र दलाल तथा मर्चेन्ट बैंकरको कार्यहरु ।
६. धितोपत्र बजार परिसूचकहरु ।
७. धितोपत्र औजारहरुः शेयर, डिबेन्चर, अप्सन, फ्यूचर, डेरिभेटिभ्स आदि ।
८. धितोपत्रको सार्वजनिक निष्काशन तथा धितोपत्र बाँडफाँट सम्बन्धी व्यवस्था तथा सो मा सूचना प्रविधिको प्रयोग तथा भूमिका ।
९. धितोपत्र कारोवार प्रणाली (Securities Trading System) र सो मा सूचना प्रविधिको प्रयोग सम्बन्धी जानकारी ।
१०. धितोपत्र कारोवारको राफसाफ तथा फछ्यौंट, धितोपत्र नामसारी सम्बन्धी व्यवस्था र सो मा सूचना प्रविधिको प्रयोग तथा भूमिका ।
११.धितोपत्रको केन्द्रीय निक्षेप प्रणाली (Central Depository System) र सो मा सूचना प्रविधिको प्रयोग तथाभूमिका ।
१२. International Securities Identification Number (ISIN) सम्बन्धीजानकारी ।
१३. धितोपत्र बजारमा Circuit Breaker System सम्बन्धी जानकारी ।
१४.धितोपत्र बजारमा Online Surveillance System सम्बन्धमा सूचना प्रविधिको प्रयोग ।
१५.सूचिकृत कम्पनी तथा धितोपत्र व्यवसायीहरुको Online Reporting System सम्बन्धमा सूचना प्रविधिको प्रयोग ।
१६.नेपाल राष्ट्र बैंक, बीमा समिति, कम्पनी रजिष्ट्रारको कार्यालय तथा नेपाल चार्टर्ड एकाउन्टेन्ट्स संस्थाको कार्यहरु ।
१७. धितोपत्र सम्बन्धी ऐन, २०६३ तथा सो अन्तर्गत बनेका नियमावली तथा निर्देशिकाहरु ।
१८. बस्तुबजार (Commodities Market) तथा डेरिभेटिभ बजार सम्बन्धीजानकारी ।

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द्वितीयपत्र (सेवा सम्बन्धी)

1. **Computer Fundamentals and IT in Nepal:**

   History of computing, Generations of Computers, binary arithmetics, Machine and assembly languages, High level language, History of computing in Nepal.

2. **Computer Networks:**

   ISO/OSI architecture, Topology, LAN, WAN, ARP, Ethernet, CSMA/CD, CDMA, Hubs, Bridges and Switches, Routers, Firewalls, Access Control List, Wireless LANs, VLAN, PPP, WAP, IP, UDP, TCP, Web and Web caching, FTP, HTTP, Electronic mail, DNS, Distributed system, Clusters.

3. **Structured and object oriented programming:**

   Data types, Operators, variables and assignments, control structures, Procedure/function, Class definitions, encapsulation, inheritance, abstraction, object composition, Polymorphism, Pattern and framework.

4. **Web Programming:**

   HTML 5, PHP, JavaScript, jQuery, CSS, XML, ASP, JSP.

5. **Client Server Computing:**

   Client server computing concepts: Building blocks, the state of client server infrastructure SQL database services: fundamentals of database servers, functions, procedures, triggers and rules, Client server transaction processing: transaction concepts, transaction models, transaction processing monitors, transaction management standards.

6. **Cryptography and Network Security:**

   Types of security (Confidentiality, integrity, availability, access-control, authentication and non-repudiation, Threats, Security attacks, conventional encryption model, MD5 and SHA algorithms, simplified DES, Block Cipher principle, RSA algorithm, Diffie-Hellman Key exchange, Number Theory-Prime and Relatively Prime Numbers, Digital Signature and authentication protocols, Kerberos, electronic mail security, Web security requirements, secure sockets layer and transport layer security, secure electronic transaction, Intruders and Viruses related threats, Firewall design principles, Multilevel Security.

7. **Data structures:**

   General concepts, Abstract Data Types, linear data structures, Trees, Algorithm design techniques, Hashing, Graphs and digraphs, Sorting.

8. **Database Management System:**

   The relational model, ER model, SQL, Functional dependency and relational database design,Data models, data normalization, data description languages, query facilities, data integrity and reliability, concurrency; File structure, Transaction Management and Concurrency Control: Concurrent execution of the user programs, transactions, Concurrency control techniques; Crash Recovery: types of failure, Recovery techniques; Query Processing and Optimization; Indexing: Hash based indexing, Tree based indexing; Distributed Database Systems and Object oriented database system; Data Mining and Data Warehousing.

9. Software Engineering principles (System analysis & design):

Software process, Software Project management, Software requirements, Software design, Implementation, Maintenance, tools and environments for software engineering, role of programming paradigm, process maturity and Improvement, ISO standards, SEI-CMM, CASE tools.

10. Operating Systems:

Processes and Threads: Symmetric, Multiprocessing, Micro-kernels, Concurrency, Mutual Exclusion and Synchronization, Deadlock. Scheduling , Memory Management, Input Output and Files: I/O devices and its organization, Principles of I/O software and hardware, Disks, Files and directories organization, File System Implementation, Distributed Systems: Distributed Message passing, RPC, Client/Server Computing, Clusters. Security: Authentication and Access Authorization, System Flaws and Attacks, Trusted system.Linux and Windows environment based servers and workstations.

11. Hardware:

Basics: Identification of Hardware, Types of Hardware, Troubleshooting: Troubleshooting methods, Identifying problems, general precautions.

12. Emerging Technology and Electives:

Modeling and simulation, Parallel and distributed computing, High speed networks, Adaptive web technology, E-commerce.

13. Computer Forensics:

Types of forensic investigations, forensic processes, toolkits, Collection of volatile data, login data, open ports, current/recent connections, reviewing event logs and registry data, obtaining system passwords, dumping system RAM, forensic duplication, Data acquisition, volume analysis, journaling, write blockers, signatures, locating and restoring deleted content, Capturing memory, memory contents identification, flash memory devices, data persistence, steganography, host protected area, post-mortem analysis, program confinement, rootkits.

नोट:

१. परीक्षाको माध्यम नेपालीवाअंग्रेजीभाषाहुनेछ ।

२. प्रत्येक पत्रको प्रश्नपत्रमा २० अंकभारको ४ लामो उत्तर दिनुपर्ने प्रश्नहरु सोधिनेछ र उक्तप्रश्नहरुमध्ये कुनै ३ प्रश्नको उत्तर दिनुपर्नेछ । यसैगरी प्रश्नपत्रमा८ अंकभारको छोटो उत्तर दिनुपर्ने ८प्रश्नहरु सोधिनेछ र उक्तप्रश्नहरुमध्ये कुनै ५प्रश्नको उत्तर दिनुपर्नेछ ।