BATTERIA 1

1. In una infrastruttura Cloud sono generalmente erogati servizi di tipo IaaS, PaaS, Saas. Dia una breve descrizione dei suddetti paradigmi e degli utilizzi specifici.
2. Se dovesse gestire un insieme di circa 100 PC ed altrettanti utenti, suddivisi in 10 uffici, 2 biblioteche e 3 scuole mediante un sistema di dominio Microsoft Active Directory, in quale modo organizzerebbe gli utenti ed i computer in rete? Dia anche una panoramica dei servizi erogabili in AD e della gestione della sicurezza.
3. Nomina e funzioni dei responsabili dei servizi ai sensi del combinato disposto degli articoli 107 e 109 del Testo unico delle leggi sull'ordinamento degli Enti locali – D.lgs. 267/2000.
4. I soggetti che effettuano il trattamento dei dati ai sensi degli articoli 28 e seguenti del Codice in materia di protezione dei dati personali – D.Lgs.196/2003.
5. ASCII Code: ASCII (American Standard Code for Information Interchange), generally pronounced “ask-key” and based on the English alphabet, was for many years one of the most widespread codes for representing text in computers. It was first published in 1967 and was last updated in 1986. Strictly speaking, it is a seven-bit code and only defines a relationship between specific characters and bit sequences. ASCII reserves the first 32 codes for control characters, such as the keyboard functions Tab and Return. The codes 33-126 represent the ten digits, pronunciation marks. The letters of the alphabet and other common symbols, the so-called printable characters. There are also a wide variety of other codes for depicting the characters and letters of other languages, but they all have the disadvantage of being limited in size and incompatible with other language environments. Starting in 1991, though, the 8-bit, respectively the 16-bit Unicode Standard with a much wider array of characters has come to replace more and more existing encoding schemes.

   To what does ASCII reserve the first 32 codes?
   Which other code replaced the ASCII code?

BATTERIA 2

1. Descriva a grandi linee la cooperazione applicativa basata sia sui webservice (SOAP) che sulle interfacce REST ed esponga le differenze tra le due metodologie.
2. In un sistema informativo aziendale l'accesso alle applicazioni è basato sui concetti di autenticazione ed autorizzazione. Illustri brevemente questi due concetti e indichi quali dei due può essere centralizzato ed esteso a tutte le applicazioni come sistema di single-sign-on.
3. Il Piano esecutivo di gestione ai sensi dell'articolo 169 del Testo unico delle leggi sull'ordinamento degli Enti locali – D.Lgs.267/2000.
4. Le misure minime di sicurezza nel trattamento dei dati con strumenti elettronici ai sensi dell'articolo 34 del Codice in materia di protezione dei dati personali – D.Lgs.196/2003.
5. DATABASES: Databases have the capability of storing huge amounts of data that a user can quickly access. The reason is that a database "knows" where individual sets of data are stored; it does not have to first load all of the data and then start "looking" for what it wants, as one does when accessing conventional files or spreadsheets. Database technology allows you to radically reduce access time, as well as system resource needs, especially if large amounts of data are involved. Another advantage to database systems is their logical versus physical structure. The user only deals with the logical structure of the data, a structure he designed himself in the process of creating the database. Storing the data physically is then done automatically be the system. This logical structure also enables the user to define links between data. This avoids redundancies and allows access to various new information, which otherwise would have to be collected manually – a rather tedious job without a database system.

   Which are the most evident positive factors of a database?
   What kind of structure stands behind a database and who does it design?

BATTERIA 3

1. La containerizzazione applicativa, ad esempio usando il sistema Docker, può essere considerata una forma di virtualizzazione a livello di sistema operativo? Indichi i principi, le caratteristiche principali ed i vantaggi.
2. Cos'è e come funziona il DHCP
3. L'ordinamento finanziario e contabile del Comune: dalla programmazione alla rendicontazione
4. La firma digitale (articoli 24 e seguenti del Codice dell'Amministrazione digitale – Dlgs.82/2005)
5. BIOS: BIOS stands for basic input output system and is a term which refers specifically to the initial code run by a personal computer. Operating between the hardware and higher software levels, its primary function is to prepare the PC so that other programs can be booted, i.e. loaded and executed. It is embedded on a chip that works directly with the hardware and peripheral devices of a system and deals with quite elementary operations such as writing individual bytes onto the monitor or a disk. BIOS routines used to be stored in ROM and were unalterable. Nowadays the BIOS are usually held on EEPROM of flash memory devices which offer the advantage of being "electronically erasable", i.e. they can easily be updated by the user. The downside, however, is that an improperly configured BIOS can cause the system to crash. To counteract such problems some motherboards have a backup or so-called Dual BIOS. Most BIOS also have a "boot block" which is a section of the ROM which runs first and cannot be changed. This code checks whether the rest of the BIOS is in order before proceeding further.

   Which is the primary function of BIOS?
   Which is the negative aspect of BIOS?

BATTERIA 4

1. Quali sono le caratteristiche del pattern architetturale Model-View-Controller (MVC) nella progettazione di applicazioni software?
2. Modelli di topologie di rete: parlarne evidenziandone le peculiarità
3. Il bilancio di previsione finanziario negli enti locali: competenza, principi generali e termini di adozione.
4. I requisiti per la gestione e la conservazione dei documenti informatici (articolo 44 del Codice dell'Amministrazione digitale – Dlgs.82/2005)
5. LANs AND INTRANETS: A local area network is a short-distance network. It is used in many offices or administrative buildings to link a group of computers together within the same building. The costs for LANs are relatively low, but their range is usually limited to distances of less than 500 metres. A LAN is economical as it allows many users to share printers, scanners, etc. Using the LAN, employees in a company can communicate with each other very easily. Though the terms LAN and intranet are sometimes used interchangeably, they are not the same. In brief, an intranet is a private computer network that employs internet protocols and network connectivity to allow employees access to an organization's pool of information or operations. Both LANs and intranets are computer networks. The computers in a network can be linked in different shapes, according to a specific topology.

   Which is the main purpose of a Local Area Network?
   What is the main difference between a LAN and a Intranet?

BATTERIA 5

1. Il candidato illustri i principi fondamentali della programmazione obiect oriented ed i vantaggi introdotti da questa tecnologia, arricchendo l'esposizione con qualche esempio di linguaggio orientato agli oggetti.
2. Nella realizzazione di un'infrastruttura di rete privata a livello cittadino, ad esempio per collegare tra loro 10 sedi comunali fisicamente distanti tra loro, quale tipo di connettività e quali apparati potrebbe mettere in campo, indipendentemente dal budget, per realizzare una rete su protocollo IP?
3. L'esercizio provvisorio e la gestione provvisoria ai sensi dell'articolo 163 del Testo unico delle leggi sull'ordinamento degli Enti locali – D.Lgs.267/2000
4. Regole generali per il trattamento di tutti i dati ai sensi degli articoli 11 e seguenti del Codice in materia di protezione dei dati personali – D.Lgs.196/2003.
5. INTERNET CRIMES: Fear of internet crime is nowadays more prevalent than concerns about more conventional crimes, according to a recently published report, and criminals are increasingly targeting cyberspace as more and more people shop online and use internet banking services. Big online threats include phishing, where a hoax e-mail asks the recipient to update his or her account details. Pharming is another online scam, in which hackers download "crimeware" to the user's computer. The software gathers personal information. Other internet threats include identity theft, viruses, hacking and cyber-bullying. One of the most controversial aspects of the Internet is spyware. Spyware secretly collects information about a user through their Internet connection. Usually for advertising purposes but sometimes also with criminal intent. Typically, spyware is embedded as a hidden element of freeware or shareware. Once installed, the spyware can monitor your Interned activities. It can thus find out e-mail addresses, passwords or even credit card numbers and then relay that information back to the spy author. Aside from the abuse of one's privacy, spyware also exploits the memory and system resources of your computer and can lead to system crashes.

   Why do criminals increasingly target cyberspace?
   How does spyware work?

BATTERIA 6

1. Cos'è e come funziona il protocollo https
2. Se dovesse mettere in produzione sul datacenter comunale un nuovo sito web basato su un CMS java, quale ambiente dovrà predisporre per l'installazione e l'erogazione sulla rete internet?
3. Le fasi della "spesa" ai sensi degli articoli 182 e seguenti del Testo unico delle leggi sull'ordinamento degli Enti locali – D.Lgs.267/2000
4. La trasmissione informatica dei documenti tra le pubbliche amministrazioni e i privati e tra le pubbliche amministrazioni stesse: modalità e valore giuridico (articoli 45 e seguenti del Codice dell'Amministrazione digitale – Dlgs.82/2005)
5. CPU: As its name implies, the Central Processing Unit (CPU) plays a central role and is often referred to as the "brain" of the computer. It executes the program instructions and also coordinates all the other activities of the system. It consists of three main parts: the control unit, the arithmetic logic unit (ALU) and the registers. The control unit examines and interprets a given program's instructions, activating the execution of various functions. The ALU performs mathematical calculations and logical operations while registers are high-speed memory units to store and control data. The program counter (PC) registers the next instruction to be executed in the main memory and instruction register (IR) contain the current instruction. A CPU that is manufactured as a single integrated circuit is usually known as a microprocessor. Beginning in the mid-1970s, microprocessors of ever-increasing complexity and power gradually supplanted other designs, and today the term "CPU" is usually applied to some type of microprocessor.

   Which are the three main parts of a CPU?
   To what is the term "CPU" usually referred to?