Consiglio Nazionale delle Ricerche

PUBBLICAZIONE, AI SENSI DELL'ART.19 DEL D.LGS N. 33 DEL 14 MARZO 2013, MODIFICATADAL D.LGS 25 MAGGIO 2016 N 97/2016, E INTEGRATA DALL'ART.1 CPMMA 145 DELLA LEGGE 27 DICEMBRE 2019 N. 160, DELLE TRACCE D'ESAME STABILITE DALLA COMMISSIONE ESAMINATRICE DEL CONCORSO DI SEGUITO INDICATO NELLA RIUNIONE DEL 16.01.2023

Bando 367.247 CTER IREA

CONCORSO PUBBLICO PER TITOLI ED ESAMI PER L'ASSUNZIONE CON CONTRATTO DI LAVORO A TEMPO PIENO E INDETERMINATO DI 1 (UNA) UNITÀ DI PERSONALE PROFILO COLLABORATORE TECNICO ENTI DI RICERCA, VI LIVELLO PROFESSIONALE PRESSO L'ISTITUTO PER IL RILEVAMENTO ELETTROMAGNETICO DELL'AMBIENTE (IREA) DEL CONSIGLIO NAZIONALE DELLE RICERCHE – BARI

DOMANDE PROVA ORALE del 16.01.23

DOMANDE ESTRATTE

DOMANDA nr 1

Amministrazione di sistemi operativi e reti locali e di apparati e servizi relativi

Il candidato spieghi le caratteristiche nella rete internet, del livello delle applicazioni (ad es. FTP) e del livello di trasporto (ad es. TCP), illustrandone le loro differenze.

DOMANDA nr 1 Inglese

The mission of the Institute for Electromagnetic Sensing of the Environment is the development of methodologies and technologies for acquisition, processing, fusion and interpretation of images and data obtained by electromagnetic sensors - operating on satellite, aircraft and in situ - and the dissemination of information extracted, aimed at monitoring environment and territory, at non-invasive diagnostic and at electromagnetic risk assessment.

The Institute has consolidated expertise in the fields of optical and microwave remote sensing, diagnostics in situ for environment and territory, combined with the biological one for risk assessment from exposure to electromagnetic fields but also for their possible applications in medicine.

DOMANDA nr 2

Amministrazione di sistemi operativi e reti locali e di apparati e servizi relativi

Il candidato spieghi le caratteristiche nella rete internet, del livello di rete (ad es. indirizzamento IP) e del livello di collegamento (ad es. reti locali, VLAN), illustrandone le loro differenze.

DOMANDA nr 2 Inglese

Remote Sensing is a set of multidisciplinary techniques and methodologies that aim at obtaining information about the environment through "remote" measurements.

In particular, microwave remote sensing uses electromagnetic radiation with a wavelength between 1 cm and 1 m (commonly referred to as microwaves) as a measurement tool. Due to the greater wavelength compared to visible and infrared radiation, microwaves exhibit the important property of penetrating clouds, fog, and possible ash or powder coverages (for example, in case of an erupting volcano or a collapsed building). This important property makes this technique virtually suitable to work in any weather condition or environment.

DOMANDA nr 3

Amministrazione di sistemi operativi e reti locali e di apparati e servizi relativi

Il candidato spieghi le caratteristiche della wireless e reti mobili ed il concetto di sicurezza delle reti.

DOMANDA nr 3 Inglese

Microwave remote sensing systems are classified into two groups: passive and active. Passive systems collect the radiation that is naturally emitted by the observed surface. In fact, objects emit energy at the microwave frequencies, although sometimes in an extremely small amount. These systems are generally characterized by relatively low spatial resolutions.

On the contrary, active systems are characterized by the presence of their own source (transmitter) that "lights up" the observed scene and, therefore, can be used both at night and day, independently of the presence of sun. The sensor transmits a (radio) signal in the microwave bandwidth and records the part that is backscattered by the target towards the sensor itself. The power of the backscattered signal allows to discriminate between different targets within the scene, while the time between the sent and the received signal is used to measure the distance of the target. A system that operates in this way is called RADAR (the name stands for RAdio Detection And Ranging), and may allow to obtain a "microwave image" of the observed scene.

DOMANDA nr 5

Amministrazione di sistemi operativi e reti locali e di apparati e servizi relativi

Il candidato spieghi cosa è un modello a strati di una rete, quali sono i livelli che lo compongono e che funzionalità implementano.

DOMANDA nr 5 Inglese

Climatic changes, desertification process, forest fires, glaciers melting, water pollution and also land cover and vegetation status can be observed thanks to remote sensors onboard of aircraft or satellites orbiting around the Earth using the Remote Sensing techniques. Remote sensing refers to the acquisition and processing of information about an object or phenomenon, without making physical contact with the object, through the use of electromagnetic radiation (intensity, frequency and polarization).

Optical Remote Sensing deals with those part of electromagnetic spectrum characterised by the wavelengths from the visible (0.4 micrometer) to the near infrared (NIR) up to thermal infrared (TIR, 15 micrometer), collecting radiation reflected and emitted from the observed surfaces.

Consiglio Nazionale delle Ricerche

DOMANDA NON ESTRATTA

DOMANDA nr 4

Amministrazione di sistemi operativi e reti locali e di apparati e servizi relativi

Il candidato illustri la gestione della memoria RAM in un computer, parlando ad es. dello spazio di indirizzamento, dello swap dei processi, della memoria virtuale.

DOMANDA nr 4 Inglese

The most commonly used microwave imaging sensor is the Synthetic Aperture Radar (SAR), that is a radar system capable of providing high-resolution microwave images. They have distinctive characteristics compared to common optical images acquired in the visible or infrared bands; for this reason, radar and optical data can be complementary, as they carry on a different informative contribution.

It is also important to highlight that the radar images can be obtained and made available to all the community, especially to those responsible for land management (Ministries and government agencies such as the Civil Protection authorities, public and local authorities, etc.), only after a significant (in terms of time and computer resources) processing operation.

Il Presidente della Commissione