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Profilo codice USR2

COLLOQUIO – 9 settembre 2022

LISTA 2

Quesito n. 1

Descrivere sinteticamente le esperienze lavorative più rilevanti svolte e, ove possibile, riconnetterle al ruolo previsto dal bando.

Quesito n. 2

La NASA insieme con i partner internazionali sta portando avanti un ambizioso programma di raccolta di materiale estratto sulla superficie marziana e ritorno sulla Terra: la missione Mars Sample Return (MSR). Illustrare gli obiettivi, le sfide tecnologiche e le opportunità di cooperazione internazionale di una missione tipo MSR per la futura colonizzazione del pianeta rosso.

Quesito n. 3

Incompatibilità di incarichi e decadenze ai sensi dell'art. 14 dello Statuto dell'ASI.

Prova di idoneità - MICROSOFT WINDOWS O SISTEMI EQUIVALENTI

A partire dalla tabella di seguito riportata (che sarà fornita all'interno del file excel denominato P**rova_USR2**) eseguire le seguenti azioni:

Progetto	Fase	2023	2024	2025	2026
Progetto 1	Fase A	500	400	0	0
Progetto 1	Fase B	0	800	600	800
Progetto 1	Fase C	0	100	350	1000
Progetto 1	Fase D	0	0	300	350
Progetto 1	Fase E	0	0	500	300
Progetto 2	Fase A	800	500	0	0
Progetto 2	Fase B	0	700	350	700
Progetto 2	Fase C	0	150	300	150
Progetto 2	Fase D	0	0	500	300
Progetto 2	Fase E	0	0	600	500

- Allineare al centro i valori delle prime due colonne
- Calcolare il costo totale annuo e il costo medio annuo di ciascun Progetto
- Stampare il file
- Salvare il file sul desktop del PC denominandolo "nome_cognome"

Prova di idoneità - LINGUA INGLESE

Leggere e tradurre la parte evidenziata in grassetto del seguente testo.

Introducing Huginn

ESA astronaut Andreas Mogensen of Denmark is set to return to the International Space Station for his first long-duration Station mission. With only one year left before his launch in mid-2023, a name for the mission has been chosen: Huginn.

This name, chosen by Andreas, originates in Norse mythology with Huginn and Muninn – two raven accomplices of the god Odin. Together, the two symbolise the human mind, with Huginn representing thought, and Muninn, memory.

These birds are not mere spies or messengers for the highest god, they also serve as his confidants and advisors, speaking with human language. At dawn, Odin sends them out to fly across the whole of Midgard, in order to gather worldly knowledge to report back each evening.

The parallels between this ancient tale and human spaceflight are clear – during his time on the Station, Andreas will conduct many cutting-edge scientific experiments, the results of which will be translated to improving life back here on Earth. As Andreas himself explains:

"Astronauts are explorers that travel into space to gather information and expand our knowledge of our world, much like Huginn, who was sent out each day to fly around the world and bring back information to Odin.

"I'm very pleased with the name Huginn, as it is so symbolic of my upcoming mission to the International Space Station," Andreas continued. "The patch that ESA has designed around the name is also beautiful and unique."

The mission patch itself, created by ESA graphic designer Karen Lochtenberg, is rendered in the red and white of the Danish flag, alongside ESA's own 'Deep Space Blue'. Like many patches before it, it is rich in symbolism relating to the ethos of the mission.

Huginn is depicted flying to the right, moving into the future as he glides over an Earth-rise horizon, which could also be seen as the Moon or Mars. Huginn's wing includes shading in the shape of Andreas' homeland, Denmark, while the white of the wing's highlight – referred to by the designer as the 'swoosh' – depicts the journey to the Space Station itself from Andreas' birthplace in Copenhagen.

Two stripes on Huginn's back depict the distinctive solar arrays of the Station, and also represent that this is Andreas' second Station mission. Six stars adorning the sky of this patch form a constellation that resembles the Viking symbol for 'safe travels'.

Andreas is scheduled to fly on a SpaceX Crew Dragon as part of Crew-7 to the International Space Station, but is also ready as backup pilot for Crew-6. He previously spent 10 days in space on a Space Station mission called 'iriss' in 2015.

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Profilo codice USR2

COLLOQUIO – 9 settembre 2022

LISTA 6

Quesito n. 1

Descrivere sinteticamente le esperienze lavorative più rilevanti svolte e, ove possibile, riconnetterle al ruolo previsto dal bando.

Quesito n. 2

La Nasa ha lanciato lo scorso anno la missione Double Asteroid Redirection Test (DART), a cui ha partecipato anche ASI con il progetto LICIACube (Light Italian Cubesat for Imaging of Asteroids). Illustrare gli obiettivi e le sfide tecnologiche di una missione tipo DART/LICIACube.

Quesito n. 3

La concussione.

Prova di idoneità - MICROSOFT WINDOWS O SISTEMI EQUIVALENTI

A partire dalla tabella di seguito riportata (che sarà fornita all'interno del file excel denominato P**rova_USR2**) eseguire le seguenti azioni:

Progetto	Fase	2023	2024	2025	2026
Progetto 1	Fase A	500	400	0	0
Progetto 1	Fase B	0	800	600	800
Progetto 1	Fase C	0	100	350	1000
Progetto 1	Fase D	0	0	300	350
Progetto 1	Fase E	0	0	500	300
Progetto 2	Fase A	800	500	0	0
Progetto 2	Fase B	0	700	350	700
Progetto 2	Fase C	0	150	300	150
Progetto 2	Fase D	0	0	500	300
Progetto 2	Fase E	0	0	600	500

- Formattare il testo in modo che la prima colonna abbia il colore blu
- Calcolare il costo medio delle Fasi nell'anno 2024
- Stampare il file
- Salvare il file sul desktop del PC denominandolo "nome_cognome"

Prova di idoneità - LINGUA INGLESE

Leggere e tradurre la parte evidenziata in grassetto del seguente testo.

Chaotic crust contains clues to Mars' watery past

Mars Express takes us over the Holden Basin – part of a region that is a high-ranking target in the search for signs of past life on the Red Planet. This image was taken on 24 April 2022 by the spacecraft's High Resolution Stereo Camera.

A barren landscape shaped by water

The Holden Basin* is part of a series of channels and sinks called the Uzboi-Ladon-Morava (ULM) outflow system that may have once drained up to 9% of the martian surface. The complex history of the ULM outflow system makes it an interesting target to explore in more detail with Mars orbiters and rovers.

In the maps on the right and directly below, we see the Holden Basin and the full ULM outflow system in context. The solid royal blue colour in the map below shows how water once flowed across this region of Mars; it would have started in channels that drain into the Argyre Planitia, then flowed through Uzboi Vallis into the location now scarred by the Holden Crater. From there it would have collected in the Holden Basin before streaming through Ladon Valles to Ladon Basin and beyond.

The map below also shows Mars' 'Grand Canyon' Valles Marineris, which we delved into in our previous Mars Express image release. Iani Chaos, another chaotic area that we have explored in detail, is visible towards the top of the image.

High-ranking target in the search for life

The entire region could be an interesting target in the search for ancient life on Mars. Our experience on Earth tells us that where there is water, there is life: could the same have been true billions of years ago on Mars?

Ladon Valles and Holden Crater – both of which lie just outside the imaged area, and can be seen in the images showing the broader region – may be particularly interesting as they contain layered and phyllosilicate-bearing deposits. Phyllosilicates are a type of mineral also found on Earth, with one example being clay. They could serve as a reaction centre for organic molecules, which make up all living things on Earth; past experiments suggest that phyllosilicates could have played a role in the origin of life.

The 140-km wide Holder Crater formed when Mars was hit by a space rock; the material that was ejected during the impact filled Holden Basin, which is itself a much older impact crater. As the crater shows no evidence that significant amounts of water flowed through it, it very likely formed after the ULM system had mostly dried out. Due to its interesting geology and potential for clues to past life, Holden Crater was on the shortlist of landing sites for NASA's Mars Science Laboratory and Perseverance rover.

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Profilo codice USR2

COLLOQUIO – 9 settembre 2022

LISTA 7

Quesito n. 1

Descrivere sinteticamente le esperienze lavorative più rilevanti svolte e, ove possibile, riconnetterle al ruolo previsto dal bando.

Quesito n. 2

Gli analoghi marziani e lunari rappresentano un laboratorio efficace per testare le tecnologie abilitanti l'esplorazione robotica. Illustrare le possibili architetture di infrastrutture che permettano la simulazione dell'ambiente rispettivamente marziano e lunare e quali sono le possibili tecnologie che si possano testare.

Quesito n. 3

I regolamenti dell'Agenzia Spaziale Italiana.

Prova di idoneità - MICROSOFT WINDOWS O SISTEMI EQUIVALENTI

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Progetto 1	Fase C	0	100	350	1000
Progetto 1	Fase D	0	0	300	350
Progetto 1	Fase E	0	0	500	300
Progetto 2	Fase A	800	500	0	0
Progetto 2	Fase B	0	700	350	700
Progetto 2	Fase C	0	150	300	150
Progetto 2	Fase D	0	0	500	300
Progetto 2	Fase E	0	0	600	500

- Impostare l'altezza righe pari a 20
- Calcolare il costo medio delle Fasi nell'anno 2026
- Stampare il file
- Salvare il file sul desktop del PC denominandolo "nome_cognome"

Prova di idoneità - LINGUA INGLESE

Leggere e tradurre la parte evidenziata in grassetto del seguente testo.

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Profilo codice USR2

COLLOQUIO – 9 settembre 2022

LISTA 8

Quesito n. 1

Descrivere sinteticamente le esperienze lavorative più rilevanti svolte e, ove possibile, riconnetterle al ruolo previsto dal bando.

Quesito n. 2

ASI intende sviluppare una piattaforma 'deep space' per l'esplorazione robotica interplanetaria su cui allocare payload e strumentazione scientifica. Descrivere una possibile architettura di sistema di tale piattaforma, illustrando i principali sottosistemi necessari per una missione 'deep space' controllata da Terra.

Quesito n. 3

Il Direttore generale dell'Agenzia Spaziale Italiana.

Prova di idoneità - MICROSOFT WINDOWS O SISTEMI EQUIVALENTI

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Progetto 1	Fase B	0	800	600	800
Progetto 1	Fase C	0	100	350	1000
Progetto 1	Fase D	0	0	300	350
Progetto 1	Fase E	0	0	500	300
Progetto 2	Fase A	800	500	0	0
Progetto 2	Fase B	0	700	350	700
Progetto 2	Fase C	0	150	300	150
Progetto 2	Fase D	0	0	500	300
Progetto 2	Fase E	0	0	600	500

- Evidenziare in colore verde la riga relativa al "Progetto 2" "Fase C"
- Calcolare i costi complessivi delle fasi B dei due Progetti
- Stampare il file
- Salvare il file sul desktop del PC denominandolo "nome_cognome"

Prova di idoneità - LINGUA INGLESE

Leggere e tradurre la parte evidenziata in grassetto del seguente testo.

Webb inspects the heart of the Phantom Galaxy

New images of the spectacular Phantom Galaxy, M74, showcase the power of space observatories working together in multiple wavelengths. In this case, data from the NASA/ESA/CSA James Webb Space Telescope and the NASA/ESA Hubble Space Telescope complement each other to provide a comprehensive view of the galaxy.

The Phantom Galaxy is around 32 million light-years away from Earth in the constellation Pisces, and lies almost face-on to Earth. This, coupled with its well-defined spiral arms, makes it a favourite target for astronomers studying the origin and structure of galactic spirals.

M74 is a particular class of spiral galaxy known as a 'grand design spiral', meaning that its spiral arms are prominent and well-defined, unlike the patchy and ragged structure seen in some spiral galaxies.

Webb's sharp vision has revealed delicate filaments of gas and dust in the grandiose spiral arms of M74, which wind outwards from the centre of the image. A lack of gas in the nuclear region also provides an unobscured view of the nuclear star cluster at the galaxy's centre.

Webb gazed into M74 with its Mid-InfraRed Instrument (MIRI) in order to learn more about the earliest phases of star formation in the local Universe. These observations are part of a larger effort to chart 19 nearby star-forming galaxies in the infrared by the international PHANGS collaboration. Those galaxies have already been observed using the NASA/ESA Hubble Space Telescope and ground-based observatories.

The addition of crystal-clear Webb observations at longer wavelengths will allow astronomers to pinpoint star-forming regions in the galaxies, accurately measure the masses and ages of star clusters, and gain insights into the nature of the small grains of dust drifting in interstellar space.

Hubble observations of M74 have revealed particularly bright areas of star formation known as HII regions. Hubble's sharp vision at ultraviolet and visible wavelengths complements Webb's unparalleled sensitivity at infrared wavelengths, as do observations from ground-based radio telescopes such as the Atacama Large Millimeter/submillimeter Array, ALMA.

By combining data from telescopes operating across the electromagnetic spectrum, scientists can gain greater insight into astronomical objects than by using a single observatory – even one as powerful as Webb!

About Webb

The James Webb Space Telescope is the world's premier space science observatory. Webb will solve mysteries in our Solar System, look beyond to distant worlds around other stars, and probe the mysterious structures and origins of our Universe and our place in it. Webb is an international program led by NASA with its partners, ESA and the Canadian Space Agency. The major contributions of ESA to the mission are: the NIRSpec instrument; the MIRI instrument optical bench assembly; the provision of the launch services; and personnel to support mission operations. In return for these contributions, European scientists will get a minimum share of 15% of the total observing time, like for the NASA/ESA Hubble Space Telescope.

MIRI was contributed by ESA and NASA, with the instrument designed and built by a consortium of nationally funded European Institutes (the MIRI European Consortium) in partnership with JPL and the University of Arizona.