INFN

Istituto Nazionale di Fisica Nucleare
LABORATORI NAZIONALI DEL GRAN SASSO

Concorso per titoli ed esami a un posto per il profilo di Collaboratore di Amministrazione di VII livello professionale con contratto di lavoro a tempo indeterminato (Bando 24384/2022)

Prova 3

1. Il candidato esponga le modalità di calcolo del valore stimato di un appalto pubblico di lavori, servizi e forniture ai sensi del Decreto Legislativo n. 50/2016.

2. Il candidato descriva i criteri per la valutazione dell'ammissibilità della spesa.

3. Il candidato esponga il ruolo del DEC ai sensi del Decreto Legislativo n. 50/2016 e si soffermi in particolare sui compiti ad esso attribuiti nella fase di esecuzione del contratto.

4. Il candidato descriva la tipologia e le modalità di rendicontazione dei costi indiretti.

5. Cos'è un database?

6. Definizione di Posta elettronica e suo utilizzo: descrivere le differenze tra Posta Elettronica Ordinaria (PEO) e posta elettronica certificata (PEC).

7. Il candidato legga e traduca il testo qui di seguito.

FEATURE & NEUTRINO PHYSICS

A VOYAGE TO THE HEART OF THE NEUTRINO

The Karlsruhe Tritium Neutrino (KATRIN) experiment has begun its seven-year-long programme to determine the absolute value of the neutrino mass

On 11 June 2018, a tense silence filled the large lecture hall of the Karlsruhe Institute of Technology (KIT) in Germany. In front of an audience of more than 250 people, 15 red buttons were pressed simultaneously by a panel of senior figures including recent Nobel laureates Takaaki Kajita and Art McDonald. At the same time, operators in the control room of the Karlsruhe Tritium Neutrino (KATRIN) experiment lowered the retardation voltage of the apparatus so that the first beta electrons were able to pass into KATRIN's giant spectrometer vessel. Great applause erupted when the first beta electrons hit the detector.

In the long history of measuring the tritium beta-decay spectrum to determine the neutrino mass, the ensuing weeks of KATRIN's first data-taking opened a new chapter. Everything worked as expected, and KATRIN's initial measurements have already propelled it into the top ranks of neutrino experiments. The aim of this ultra-high-precision beta-decay spectroscope, more than 15 years in the making, is to determine, by the mid-2020s, the absolute mass of the neutrino.

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Prova 1

1. Il candidato descriva cosa sia la prassi amministrativa.

2. Il candidato esponga sinteticamente le fasi del procedimento di scelta del contraente e di conclusione del contratto ai sensi del Decreto Legislativo n. 50/2016.

3. Il candidato descriva la fatturazione elettronica e lo split payment.

4. Il candidato descriva le sanzioni disciplinari.

5. Che cosa è la firma digitale?

6. Descrivere brevemente l'utilizzo di un foglio di calcolo tipo "Workbook" di EXCEL.

7. Il candidato legga e traduca il testo qui di seguito.

ALICE REVITALISED

The ALICE experiment is being tuned up to make even more precise measurements of the quark–gluon plasma and other extreme nuclear systems.

ALICE (A Large Ion Collider Experiment) will soon have enhanced physics capabilities thanks to a major upgrade of the detectors, data-taking and data-processing systems. These upgrades will improve the precision on measurements of the high-density, high-temperature phase of strongly interacting matter, the quark–gluon plasma (QGP), together with the exploration of new phenomena in quantum chromodynamics (QCD). Since the start of the LHC programme, ALICE has been participating in all data runs, with the main emphasis on heavy-ion collisions, such as lead–lead, proton–lead, and xenon–xenon collisions. The collaboration has been making major inroads into the understanding of the dynamics of the QGP – a state of matter that prevailed in the first instants of the universe and is recreated in droplets at the LHC.

To perform precision measurements of strongly interacting matter, ALICE must focus on rare probes – such as heavy-flavour particles, quarkonium states, real and virtual photons, and low-mass dileptons – as well as the study of jet quenching and exotic nuclear states. Observing rare phenomena requires very large data samples, which is why ALICE is looking forward to the increased luminosity provided by the LHC in the coming years. The interaction rate of lead ions during the LHC Run 3 is foreseen to reach around 50 kHz, corresponding to an instantaneous luminosity of 6×10^{27} cm^{-2} s^{-1}. This will enable ALICE to accumulate 10 times more integrated luminosity (more than 10 nb^{-1}) and a data sample 100 times larger than what has been

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Prova 2

1. Gli elementi costitutivi del rapporto di pubblico impiego.

2. Il candidato descriva il principio di trasparenza dell'azione amministrativa: riferimenti normativi e finalità.

3. Il candidato esponga i principi generali che regolano la disciplina della contrattazione ad evidenza pubblica ai sensi del Decreto Legislativo n. 50/2016.

4. Il candidato descriva il bilancio annuale di previsione.

5. Che cos'è lo SPID?

6. Descrivere brevemente i formati di file .doc e .pdf.

7. Il candidato legga e traduca il testo qui di seguito.

NEXTGEN VOICES

Artificial intelligence in research

We asked young scientists to **describe an example of artificial intelligence or machine learning in research, its broader implications in the field, and the challenges scientists face when using such technologies.** Our survey's responses reflected a variety of countries and fields, but only 6% came from women (compared to the typical 30 to 40%). Excerpts of some of the responses we received are printed below. —**Jennifer Sills**

Surgical robots are gradually being adopted to perform complicated surgical interventions, including minimally invasive and surgeon-less surgeries. The implementation of robotic surgery amplifies the effects of automation, allowing work around the clock with higher productivity, accuracy, and efficiency as well as shorter hospital stays and faster recovery. Because surgeons no longer have to perform the whole surgery, they do not get tired as easily and may perform multiple procedures, thus decreasing patient waiting periods. These novel techniques and machines may enhance patient outcomes.

The biggest concern is how to address (or even prevent) technical difficulties in the midst of a surgery. Ethical concerns and loss of relevance of surgeons need to be addressed as well. As such machines perform surgeries that require cognitive and decision-making abilities that have social, moral, and clinical consequences, programmers are faced with an added layer of quandary: how to equip artificial intelligence with tools to handle the inherent moral responsibility associated with such tasks. Moreover, can robots ever be as proficient as humans in performing surgeries? Who will take responsibility if a surgery fails due to poor judgment? These questions need to be addressed before we allow machines to perform the role of clinicians.

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Machine-learning techniques and lightweight unmanned aerial vehicles are revolutionizing environment monitoring. In the past, investigating vegetation and wildlife status required extensive surveys of the area. Now, unmanned aerial vehicles can access hard-to-reach places and quickly capture vegetation types, area and wildlife count, and activity based on high-resolution images. The results derived from these new techniques are even more precise than estimates made by the traditional