Istituto Nazionale di Fisica Nucleare
LABORATORI NAZIONALI DEL GRAN SASSO

Concorso, per titoli ed esami, a un posto per il profilo professionale di Tecnologo di III livello professionale, con contratto di lavoro a tempo indeterminato (Bando 21939/2020)

Prova orale – Testo 1

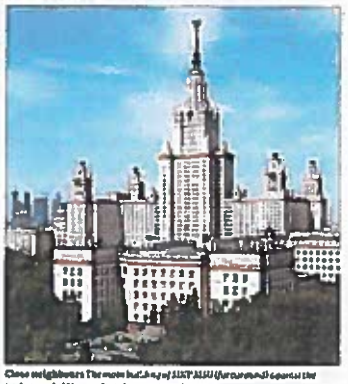
1. Il candidato illustri le tipologie e le caratteristiche dell'alimentazione per garantire adeguata continuità agli utilizzatori.

2. Descrivere i sistemi di protezione contro il cortocircuito per una linea in cavo di distribuzione di media tensione e bassa tensione.

3. In cosa consiste l'applicazione del criterio elettrico nel dimensionamento di una linea?

4. Descrivere i vantaggi del sistema SCADA nella gestione e controllo di un impianto elettrico.

PHYSICS FLIES HIGH AT SINP



Close neighbours The main building of SINP MSU (foreground) opposite the high-pyramid of Moscow State University and its spire

Eduard Boos and Victor Savrin look back at 75 years of developments at Russia's Skobeltsyn Institute of Nuclear Physics, which range from pioneering satellite experiments to participation in the LHC-experiment upgrades.

The Skobeltsyn Institute of Nuclear Physics (SINP) was established at Lomonosov Moscow State University (MSU) on 1 February 1946, in pursuance of a decree of the government of the USSR. SINP MSU was created as a new type of institute, in which the principles of integrating higher education and fundamental science were prioritised. Its initiator and first director was Soviet physicist Dmitri Vladimirovich Skobeltsyn, who was known for his pioneering use of the cloud chamber to study the Compton effect in 1923 – aiding the discovery of the positron less than a decade later.

It is no coincidence that SINP MSU was established in the immediate aftermath of the Second World War, following the first use of nuclear weapons in conflict. The institute was created on the basis that it would train personnel who would specialise in nuclear science and technology, after the country realised that there was a shortage of specialists in the field. Thanks to strong leadership from Skobeltsyn and one of his former pupils, Sergei Nikolaevich Vernov, SINP MSU quickly gained recognition in the country. As soon as 1949, the government designated it a leading research institute. By this time a 72 cm cyclotron was already in use, the first to be used in a higher education institute in the USSR.

Skobeltsyn and Vernov continued with their high ambitions as they expanded the facility to the Lenin Hills, along with other scientific departments in MSU. Proposed in 1949 and opened in 1953, the new building in Moscow was

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Prova orale – Testo 2

1. Il candidato descriva i metodi di esercizio delle masse ai fini della sicurezza nelle reti di bassa tensione

2. Quali sono le classificazioni degli utilizzatori di un sistema di utenza ai fini dei requisiti di continuità?

3. Quale è il principio di funzionamento di una protezione differenziale?

4. Descrivere l'applicazione di un sistema SCADA per la gestione di un impianto elettrico.

Implementing a vision for CE

The 2020 update of the European strategy for particle physics forms the basis of CERN's objectives for the next five years, explains Fabiola Gianotti.

Fabiola Gianotti *is Director-General of CERN. Her second term of office began in January 2021.*

The European strategy for particle physics (ESPP), updated by the CERN Council in June 2020, lays the foundations for a bright future for accelerator-based particle physics. Its 20 recommendations – covering the components of a compelling scientific programme for the short, medium and long terms, as well as the societal and environmental impact of the field, public engagement and support for early-career scientists – set out an ambitious but prudent approach to realise the post-LHC future in Europe within the worldwide context.

Full exploitation of the LHC and its high-luminosity upgrade is a major priority, both in terms of its physics potential and its role as a springboard to a future energy-frontier machine. The ESPP

Great shape Wandering the immeasural *of scientific knowledge, welcomes visitors to*

Geneva region, and to gather pledges for the necessary funds to build it. The estimated FCC cost cannot be met only from CERN's budget, and special contributions from non-Member States as well as new funding mechanisms will be required.

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Prova orale – Testo 3

1. Il candidato illustri i criteri di scelta di un trasformatore media tensione/bassa tensione per l'alimentazione di un sistema di utenza tipico per un laboratorio di ricerca.

2. Per quali valori della corrente di cortocircuito è necessaria la verifica dell'energia passante della protezione in relazione alle caratteristiche del cavo?

3. Descrivere le strategie di manutenzione e gestione applicate agli impianti elettrici di media e bassa tensione.

4. Descrivere il principio di funzionamento di un sistema di supervisione e controllo.

5.

When SCADA is the right solution

What is a SCADA system?
SCADA systems are used all over the world for supervisory control and data acquisition. Understanding a useful SCADA and how to make it begins with an understanding about the role of SCADA in a system.

The need for SCADA evolved over time after agrarian and handicraft economies shifted rapidly to industrial and machine-manufacturing economies during the Industrial Revolution in the 18th century. Initially, machines were developed that could perform repeatable processes faster, with more consistency and with greater precision than people. Much of this was also about eliminating human error. While this first step in the Industrial Revolution replaced many people with machines for work that was previously done by hand, it opened up questions about whether it was possible to completely eliminate the human factor from the whole process, including the management of connecting all the different aspects of the manufacturing process, as well as the hands-on aspects.

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