

Cross-Vitagen Educational Paradigm – from Lessons to Final Exam

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Abstract

In this paper, cross-vitagen educational paradigm is considered from lessons to final exam. This paradigm consists of “Two projections method” and “Exam as Additional Training” concepts. First part is based on two screens which are used for educational material illustration – first small screen shows main items or/and terms, second large screen represents detailed information. This method can cover the needs of more than 60 % students with “visual” representative system preference and can be used for “audio”, “discrete”, and “kinesthetic” students. During midterm and final exams, teachers use the “Exam as Additional Training” vitagen concept which is based on client (user interface – front-end part) and server (knowledge base – back-end part). This concept main algorithm uses random approach for questions and answers selection plus proper sets of related answers for appropriate question. Students describe cross-vitagen educational paradigm as user-friendly and effective for subject skills’ improvement.

Keywords: University Education, Vitagen Education, Representative System, Test.

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Heat Transfer and Friction Characteristics of different V-RIB roughened Solar Air Heater Ducts

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Abstract

in rectangular ducts to improve the thermal performance of solar air heaters. It has been reported that v-rib configuration performed better as compared to other rib configurations. In this comparative study, thermal and thermohydraulic performances of solar air heaters having rectangular ducts roughened with different v-rib configurations have been evaluated and compared to determine best performing v-rib configuration. Thermal and thermohydraulic performances of solar air heater ducts roughened with multiple-v-rib with gap configuration have been found to be better as compared to other v-rib configurations.

Keywords: Artificial roughness, Nusselt number, Friction factor, Thermohydraulic performance, Enhancement parameter.

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Ground Improvement by using Soil Nailing Technique

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Abstract

Infrastructure demand is increasing day by day for the growing population in India. In order to meet the demand, infrastructure has to develop on, above and below the ground surface at the selected site. In situ soil characteristics of a construction site are different from those desired because engineering properties of soil varies from place to place and at particular place it varies with depth below ground surface. In such situations, only innovative ground improvement technique can work. Soil Nailing is one of the ground improvement techniques suitable for underground construction, temporary and permanent slope strengthening, and vertical excavation. This paper presents about the soil nailing an innovative and emerging cost effective ground improvement technique and its design for cohesion less strata.

Keywords: soil nailing, ground improvement, excavation, slope stability.

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Performance Studies of Densified Small Particles on Beam Column Joints

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Abstract

Reinforced concrete beam-column joints have an important function in all structures. Under seismic excitation, the beam column joint region is subjected to horizontal and vertical shear forces whose magnitude is many times higher than the adjacent beam and column. Strength and ductility of structures depends mainly on proper detailing of the reinforcement in beam-column joints and the old structures were found ductility deficient. The seriously damaged structures during these earthquakes show the need and importance of design of reinforced concrete (RC) structures with high ductility.

In such high performance composites, densely spaced fibres can suppress the growth of micro-cracks and prevent strain localization leading to failure. Fibres substantially increase strength and strain capacity of composites. A HPFRC like FDSF (Fibre-reinforced Densified Small Particle systems) used in CRC applications holds compressive strength in the range of 150 to 400 MPa. DSP materials, including fibre-reinforced DSP and CRC are obtained by using high quantities of super plasticizers and high volumes of micro silica. Recent works on the freeze-thaw durability (also in the presence of de-icing salts) of fibre-reinforced DSP confirm to excellent behaviour in the expected long term service life. In the case of High Performance Densified Small Particle Concrete (HPDSPC), since concrete is dense even at the micro-structure level, tensile strain would be much higher than that of the conventional SFRC, SIFCON & SIMCON. This in turn will improve cracking behaviour, ductility and energy absorption capacity of composites in addition to durability.

Key Words: HP High Performance, FRC Fibre Reinforced Concrete, CRC Compact Reinforced Composites, DSP Densified Small Particle.

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Removal of Copper (II) ions from effluent stream using Activated Charcoal and Kinetic studies of adsorption

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Abstract

Batch adsorption of Cu (II) on activated charcoal was undertaken in this work. The effect of key parameters i.e. temperature, pH, contact time and initial adsorbate concentration on adsorption were studied. The concentration range studied in this work was 5 to 25 mg/L with optimum parameters of pH 6, adsorbent dose 5g/L, temperature of 288±1K and contact time of 5.0 hours. An increase in adsorption of Cu (II) ions with time was observed which attained saturation in about 5 hours. The effect of temperature was also studied and as the temperature was increased, a decrease in the rate of adsorption was observed. Adsorption isotherms were plotted and equilibrium adsorption data were tested for the Langmuir, and Freundlich isotherms. Maximum adsorption capacity of 25 mg/g of activated charcoal was obtained. Different kinetic models viz first order, second order, pseudo first order, pseudo second order and power function model were applied to the experimental data to find the best fit equation. The best fit was obtained with the Lagergren or pseudo first-order model. Thermodynamic parameters were evaluated which confirmed the spontaneous nature of adsorption.

Key words: Activated charcoal, Cu (II), adsorption, Kinetic models, Thermodynamics.

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Role of Capability Building and Development in an Organization

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Abstract

The Indian pharmaceutical industry has shown tremendous progress in term of infrastructure development, technology based creation and a wide range of production. This is the fifteenth largest individual market by sales and fourth by volume of production. It has a very high managerial and technical skilled workforce which contributes positively for the good future of pharmaceuticals industry. Capability Building can be defined as "organized learning activities arranged within an organization in order to improve performance and facilitate personal growth for the purpose of improving the job, the individual, and the organization". It includes the areas of training and development, career development, and organization development. This is related to improve the performance of organization by maximizing the efficiency and performance of the employees. These attributes are important in performing the tasks required by their occupation, provide people with a foundation for learning other skills, and enhance people's ability to innovate and adapt to workplace change.

The paper doesn't limit itself to finding out the capability building and development but also tries to find out the degree to which the capability is required. The core capabilities are those attributes which are required by all the employees for the better understanding of their role and skill.

Keywords: Capability / Pharmaceuticals / Motivation

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