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Paper – 1

Geopolymer Concrete under Low Cycle Fatigue Compressive Loading

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Abstract : Geopolymer is an innovative material and has the potential to replace ordinary Portland cement. Behaviour of Geopolymer is well documented under monotonic loading. In practices all the structures are subjected to repeated cyclic loadings. Therefore in present work, behaviour of Geopolymer concrete is studied under uniaxial low cycle fatigue compressive loading. For this purpose, an experimental study was conducted on 20 cylinder specimens to establish stress-strain envelope, common point and stability point curves under cyclic loadings. Stability point curves are used to obtain permissible stress level. The non dimensional plastic deflection at the end of unloading is plotted against envelope point, common point and stability point deflection. Mathematical expressions for the cyclic stress-strain curves are proposed.

Paper – 2

Structural Evaluation of In-situ Modulus of Sub-grade Layer using Light Weight Deflectometer

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Abstract : Light Weight Deflectometer (LWD) is modern non destructive test instrument for strength assessment of unbound layers of flexible pavement. In this study a Zorn ZFG 3.0 LWD is used to measure the deflection modulus (Evd) of sub-grade layer. Field testing is performed at 9 various locations using two different falling mass 10 and 15 Kg. The Evd values of sub-grade layer for 10 and 15 Kg of falling mass were commonly found to range from 29 to 40MPa and from 34 to 44MPa respectively. The coefficient of variation of Evd of sub-grade layer were found to be 9.0925% and 7.563 % for 10 and 15 Kg of falling mass respectively. It was found that falling mass and falling influences the LWD test results. It can be concluded from the test results and literatures that LWD is very useful device for evaluation,quality control and quality assurance in flexible pavement constructions.

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Paper – 3

Synthesis and Biological Activity Determination of Some Novel Potent Angiotensin II Receptor Antagonist with Antihypertensive Activity

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Abstract : In order to treat hypertension, intervention of Renin Angiotensin Aldosterone system by a comparatively newer class of antihypertensive agents, Angiotensin II receptor blockers (ARB), have proved to be very effective. Accordingly, in the current work, a series of novel angiotensin II type 1 receptor antagonists have been designed and synthesized .In silicio docking studies and in vivo biological evaluation of the proposed derivatives have also been reported here. The Anti-hypertensive activity of the derivatives was determined by Invasive method on Angiotensin II induced hypertensive rats .The activity was also determined using non invasive method of blood pressure measurement by rat tail cuff. The antihypertensive effect of the derivatives was maintained for a considerable period of time, which indicated that they have favorable blood pressure-lowering properties. Experimental findings were in good agreement with docking studies. The proposed derivatives can therefore be considered as novel anti-hypertensive candidates and deserve further investigations.

Paper – 4

Ceramics for Pollution Control and Environmental Applications

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Abstract : The present work discusses the applications of ceramics in the field of pollution control and environmental conservation. Various fields are highlighted for effective application of ceramics. Air, water and land are the basic components of the environment; human interference has been polluting these components. Air is generally polluted by industries liberating organic and inorganic pollutants, technologies such as fungal bio-filtration on ceramics rings, catalytic ceramic bag filter technology are the feasible applications for air pollution control. Ceramics also offer a solution in the treatment of wastes causing land degradation such as mercury, radioactive and construction waste. Technologies such as stabilization of mercury waste mixture by chemically bonded phosphate ceramic technology, radioactive waste treatment using ceramic glasses could be beneficially applied for the treatment of wastes. Ceramics also find the applications in the fields of domestic waste water treatment, water treatment, air monitoring etc. for an efficient monitoring and management of environment. The present work discusses certain important pollutants that have major impact on the environment with feasible applications of ceramics.

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Paper – 5

Seismic Analysis of RC Shear Wall Frame Buildings with and without Openings in Shear Wall

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Abstract : The reinforced concrete shear wall is one of the most commonly used lateral load resisting system in high rise buildings. Because of its high inplane stiffness and strength, it can resist large horizontal forces and support gravity load simultaneously. During seismic excitation, they contribute in absorbing moments and shear forces and reduces torsional response. Often in practical scenario shear walls, large in dimensions are provided with an opening area in the middle or side of the wall to serve various architectural purpose, which ultimately results into substantial decrease in strength of the wall and have an adverse effect on seismic response of frame shear wall structure. The scope of this study is to compare the effect of shear wall with and without opening in RC frame shear wall structure in multi storey buildings. To carry out the analytical investigation, the structures are modelled in finite element software SAP2000.v.17.1.1.Three different types of analysis is carried out i.e. linear static, non linear static and non linear dynamics. The parameters that are compared are storey displacement, time period, base shear, maximum displacement, target displacement, energy dissipation and equivalent stiffness. For the accomplishment of this purpose the work is done in two parts. In the first part five different 10 storey shear wall RC frame models are considered with no opening area to variable size of openings area of 7%, 13%, 27% & 40% respectively. In the second part four different 10 storey shear wall RC frame models are considered with an opening area of 13% and horizontal opening eccentricity of (eh=0,eh=0.5m,eh=1.0m & eh=1.5m) respectively from centre of shear wall. The comparison of these models for different parameters is presented here.

Paper – 6

Comparison of Engineering - Non Engineering and UG - PG IT Multinational Employees' Perception towards Motivation and its Associated Factors

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Abstract : The purpose of this study was to compare the perception of IT MNCs employees towards motivation and its associated factors with reference to their qualification and stream of work. In order to do so, the researcher aimed to identify the factors associated with motivation in an organization and study the effect of qualification and stream of work on perception towards motivation and its associated factors. The data were collected from 103 IT professionals working in MNCs. The present study was survey in nature. Data were collected by a tool developed by the researcher. The data were analyzed with the help of t-test. Five factors of motivation were identified such as Accountability, Self progression, Emoluments, Association and Safety with the help of factor analysis. Comparisons were made with the help of t-test. After analyzing the data it was found that engineering and non engineering employees are similar in their perception towards motivation and its associated factors except self-progression factor. In terms of self progression engineering employees perceived better than the non engineering employees. UG and PG degree holder employees both had similar perception towards Accountability, Self-progression, Emoluments, Association, Safety factors and overall motivation.

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Paper – 7

Effect of Grade of Concrete on Behavior of Short Reinforced Column

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Abstract : The grade of concrete as well as the detailing of reinforcement is very important factor of a column. The ductility of the column varies as the grade of concrete changes. As the grade of concrete goes on increasing it is found that the compressive strength of that section increases but simultaneously the ductility of the column goes on decreasing. In high rise building, to avoid the bigger sectional size higher grade of concrete is used. In the present research study, the ductility of M20 grade of concrete column is compared with the M30 grade of concrete column. The cross sectional size of the column used in this experiment is of 150 x 150 mm with the height of 960 mm. The longitudinal reinforcement used in the column is 4 bars of 10 mm diameter. The confinement reinforcement used is of 6mm diameter. The axial strength, axial displacement and lateral displacement were measured. The axial and lateral displacements were measured with the help of Baumers sensors connected to a data logger system through cables. The variation of loads vs. axial & lateral displacement were drawn. It is observed that there is increase in the strength of a column as grade of concrete increase. And the ductility of the column decreases as the grade of concrete increase.

Paper – 8

Rational Evaluation of Stripping and its Control

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Abstract : Stripping is the process of partial/full removal of bitumen film from aggregate surface. There are several factors which can cause reduction in the bond between aggregate and bitumen which ultimately results in the stripping. Moisture damage, environmental factors, traffic pressure are some of the factors which cause stripping that leads to significant problems with the durability of the pavements. It has been found out that most of the studies conclude that stripping is mainly caused due to the presence of moisture on the pavement. In India, IS: 6241-1971 'Method of Determination of Stripping Value of Road Aggregate' is the standard describing the stripping test for the coarse aggregate in which aggregate of specified size coated with bitumen are kept immersed in water for 24 hours at 40°C. A brief overview of the testing methods of stripping phenomenon of bituminous mixtures being followed the world over and the notable works related to control of stripping has been presented in this paper.

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Paper – 9

Choosing Course Conundrum - A Case study of Diploma Chemical Engineering in Gujarat

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Abstract : During the last several years, it has become increasingly difficult for student to decide for polytechnic or diploma course on account of reducing numbers of students with respect to seat availability. Deciding the course and college may just seem simple and unimportant, but it affects the entire career more than we may know. Students' interest in study can change just because whether they are admitted or not at their preferred college. With this backdrop, this study examines the influence of various criteria on students' choices of diploma chemical engineering education. The existing students of diploma in chemical engineering of government polytechnics in the State of Gujarat were adapted for use in this study. Even though this study found no interaction effects between the student characteristics, the sources of practical self-efficacy of the college, or other subcategories of the vicarious choice parameter, this study did find statistically significant results for several independent variables: fee structure, hometown environment, and the placement track record received in the diploma chemical course. Additionally, need for proper counseling and proximity to hometown warrant further investigation with a larger sample size. Different parameters discussed here are weighed by the student for finalizing the diploma admission across the various courses and locations. These need to be studied for proper counseling design by the competent authority.

Paper – 10

Bedrock for Outcome Based Education - Course Plan

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Abstract : National Board of Accreditation has introduced hierarchy of objectives at institute, department and programme level. At institute and department level it is vision and mission statements, at programme level it is programme educational objectives, programme outcomes and course outcomes. To ensure the development of abilities in students at all levels of hierarchy course plan plays a very important role. Course plans need to be designed using principles of education psychology, education technology and assessment. They need to be implemented in order to develop the abilities and also need to be evaluated for their effectiveness so that in the next cycle of design, implementation and evaluation of course plan can be improved. In this paper, definitions related to course plan, concept of course plan, purpose of course plan, elements of course plan, method of preparing the course plan, process of implementing and evaluating the course plan are briefly described. The paper briefly highlights the role of activities, tasks and assignment in developing the intended abilities. It also spells out the role of appropriate teaching learning methods and teaching aids in developing the abilities. It describes the evaluation of impact of course planning at institute level and taking major decisions related to policy formulation, organizing resources and training of teachers. Recommendations for implementing the course planning system for outcome based education are made. Course plan is bedrock for outcome based education because it is prepared for all types of instructional sessions theory, practical, workshop, industrial training and major project work of the students.

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Book Review

Doing Research in Education- Theory and Practice

Anil Kumar

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Doing Research in Education - Theory and practice is a newly, first time introduced book on research methodologies for those who are doing dissertations during their graduation programme, carrying out research work leading to PhD and budding professionals, as it speaks about the concept, process and designs in which research can be carried out , data can be collected with the help of suitable tools/ instruments, properly analysed andreliable and valid inferences can be drawn.