

## PAKISTAN ENGINEERING CONGRESS THE EXECUTIVE COUNCIL FOR THE 70<sup>TH</sup> SESSION

### PRESIDENT

**Engr. Rana Muhammad Saeed Ahmad Khan**

### VICE-PRESIDENTS

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| 1. Engr. Muhammad Siddiq Chattha  | 9. Engr. R. K. Anver            |
| 2. Engr. Muhammad Arif            | 10. Engr. Prof. Mian Zia-ud-Din |
| 3. Engr. Ch. Ghulam Hussain       | 11. Engr. Dr. Izhar ul Haq      |
| 4. Engr. Ch. Muhammad Rashid Khan | 12. Engr. Husnain Ahmad         |
| 5. Engr. Syed Akhtar Ali Shah     | 13. Engr. Syed Anwar-ul-Hasan   |
| 6. Engr. Syed Mansoob Ali Zaidi   | 14. Engr. Faqir Ahmad Paracha   |
| 7. Engr. Ikram-ul-Haq             | 15. Engr. Abdur Raziq Khan      |
| 8. Engr. Dr. Bagh Ali Shahid      |                                 |

### OFFICE BEARERS

- |                                 |                     |
|---------------------------------|---------------------|
| 1. Engr. Syed Mansoob Ali Zaidi | Secretary           |
| 2. Engr. Shabbir Ahmad Qureshi  | Joint Secretary     |
| 3. Engr. Ch. Muhammad Shafiq    | Business Manager    |
| 4. Engr. Zaffar Ullah Khan      | Publicity Secretary |
| 5. Engr. Ahmad Nadeem           | Treasurer           |

### EXECUTIVE COUNCIL MEMBERS

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 1. Engr. Akhtar Abbas Khawaja      | 19. Engr. Khalid Javed            |
| 2. Engr. Ch. Khuda Yar             | 20. Engr. Ahmad Nadeem            |
| 3. Engr. Muhammad Ibrahim Malik    | 21. Engr. Nayyer Saeed            |
| 4. Engr. Najam Waheed              | 22. Engr. Syed Nafasat Raza       |
| 5. Engr. Anwar Ahmad               | 23. Engr. Pir M. Jameel Shah      |
| 6. Engr. Naveed Alam               | 24. Engr. Malik Atta-ur-Rehman    |
| 7. Engr. Zaffar Ullah Khan         | 25. Engr. Capt. (R) M. Qadir Khan |
| 8. Engr. Ch. Aftab Ahmad Khan      | 26. Engr. Muhammad Naeem Chughtai |
| 9. Engr. Tahir Anjum Qureshi       | 27. Engr. Shahid Ahmad            |
| 10. Engr. Liaqat Hussain           | 28. Engr. Syed Saleem Akhtar      |
| 11. Engr. Abdul Sattar Khan Lillah | 29. Engr. Shehzad Jamil Sheikh    |
| 12. Engr. Rana Muhammad Ghous      | 30. Engr. M. S. Khan              |
| 13. Engr. M. M. Khan               | 31. Engr. Sabir Khan Saddozai     |
| 14. Engr. Sajjad Hussain Nasim     | 32. Engr. Iftikhar Ahmad          |
| 15. Engr. Ijaz Ahmad Cheema        | 33. Engr. Muhammad Saeed          |
| 16. Engr. Ali Waqas Ch.            | 34. Engr. Taufique Ahmad          |
| 17. Engr. Ch. Muhammad Shafiq      | 35. Engr. Syed Abdul Qadir Shah   |
| 18. Engr. Tariq Iqbal Mian         |                                   |

## NAME OF PRESIDENTS

1912-14.....	<b>The Hon'ble Sir H.P. Burt, K.C.I.E.</b>
1914-15 .....	The Hon'ble Col. R.S. Maclagon, C.B., CIE
1915-16 .....	The Hon'ble Col. R.S. Maclagon, C.B., CIE
1916-17 .....	Col. S.L. Craster, C.I.E.
1917-18 .....	The Hon'ble Mr. D.W. Aikman, C.I.E.
1918-19 .....	Mr. F.W. Woods
1919-20 (April 1919-April 1920)....	Mr. A.S. Montgomery
1920-21 (April 1920-April 1921)...	Mr. H.W. MIVES/M.F.T. Butes
1921-22 (April 1921-April 1922)...	Mr. W.P. Sangster
1922-23 (April 1922-April 1923)...	Mr. F.A. Hadow
1923-24 (April 1923-April 1923)...	Mr. Sir Ganga Ram, C.I.E., M.O.V.
1924-25 (April 1924-April 1925)...	Mr. E.R. Foy
1925-26 (April 1925-April 1926)...	Mr. Lt. Col. H.E.C. Cowie, R.E./Mr. Lines
1926-27 (April 1926-April 1927)...	Mr. A.R. Astury
1927-28 (April 1927-April 1928)...	Mr. R.P. Hadow
1928-29 (Feb. 1928-Feb. 1929).....	Mr. Col. C. Walton, D.S.O, R.E.
1930-31 (Feb. 1929-Feb. 1931).....	Mr. W.S. Dorman
1931-32 .....	Mr. J.B. Smith, C.I.E.
1932-33 .....	R.B.W. Chopra
1933-34 .....	Lt. Col. W. Macrae, R.E.
1934-35 .....	R.B. M.S. Dhody
1935-36 .....	Mr. D. Macfarlane
1936-37 .....	Mr. J.D. H. Bedford
1937-38 .....	R.B.B. N. Singh
1938-39 .....	Mr. D.A. Howell
1939-40 .....	R.B.B.P. Varma
1940-41 .....	Mr. R. Trevor Jones, M.C.
1941-42 .....	Mr. A. St. G. Lyster
1942-43 (March 1942-Feb. 1943)...	Sir, William Roberts, C.I.E.
1943-44 (Feb. 1943-Feb. 1944).....	Sir Arthur Griffin, Kt, O.B.E.
1944-45 (Feb. 1944-Feb. 1945).....	Mr. F.F. Haigh, C.I.E.
1945-46 (Feb. 1945-Feb. 1946).....	Mr. A.M.R. Montague, C.I.E.
1946-47 (Feb. 1946-Feb. 1947).....	Mr. R.B.D. Khanna
1947-49 .....	.....
1949-51 (Feb. 1949-Feb. 1951).....	Mr. K.B. M.A. Hamid, I.S.E.
1951-52 (April 1951-Dec. 1952)....	Mr. Khan Muhammad Azam
1952-54 (Dec. 1952-April 1954)....	Mr. K.B.A. Ghafoor
1954-55 (April 1954-March 1955)..	Kazi Zahir Hussain
1955-56 (March 1955-Feb. 1956)...	Mr. A.D. Ashraf
1956-57 (Feb. 1956-Feb. 1957).....	Mr. Khan Muhammad Inamullah Khan
1957-58 (Feb. 1957-March 1958)...	Mr. M.M. Zubair
1958-59 (March 1958-Feb. 1959)....	Mr. Mir Bashir Khan
1959-60 (Feb. 1959-Feb. 1960).....	Mr. S.I. Mahbub
1960-61 (Feb. 1960-Feb. 1961).....	Ghulam Sadiq Khan
1961-62 (Feb. 1961-April 1962).....	Mian Abdul Aziz
1962-63 (April 1962-Oct. 1963).....	Mr. Abdul Rashid Kazi, S.Q.A.
1963-65 (Oct. 1963-March 1965)...	Mr. C.A. Hamid
1965-66 (March 1965-Oct. 1966)...	Mr. A.M. Akhoond, S.I. P.R.S.
1966-68 (Oct. 1966-Feb. 1968).....	Mr. M.A. Waheed, P.S.E.I.
1968-69 (Feb. 1968-March 1969)...	Sh. Ahmad Hassan, S.Q.A.
1969-71 (March 1969-April 1971)..	Mian Alim-ud-Din S.Q.A.S.K.
1971-72 (April 1971-April 1972)....	Mr. I.A.S. Bokhari
1972-74 (Dec. 1972-Nov. 1974).....	Sayyid Hamid
1974-75 (Nov. 1974-Dec. 1975).....	Dr. Mubashir Hasan
1975-78 (Dec. 1975-May 1978).....	Syed Muhammad Ayoob
1978-80 (May 1978-Dec. 1980).....	Mr. Ashfaq Hasan
1980-82 (Dec. 1980-April 1982)....	Syed Muhammad Ayoob
1982-83 (April 1982-April 1983)...	Mr. Daud Beg
1983-85 (April 1983-Oct. 1985)....	Mr. Masih Ullah Khan
1985-86 (Oct. 1985-Oct. 1986).....	Mian Masud Akhtar
1986-87 (Oct. 1986-Dec. 1987).....	Ch. Abdus Salam
1987-89 (Dec. 1987-Jan. 1989).....	Dr. Muhammad Ikramullah
1989-92 (Jan. 1989-Feb. 1992)....	Mr. Shamsul Mulk
1992-94 (Feb. 1992-July 1994).....	Rana Allah Dad Khan
1994-96 (July 1994-Oct. 1996).....	Ch. Mazhar Ali
1996-98 (Oct. 1996-May 1998)....	Mr. Khalid Latif Khawaja
1998-2000 (May 1998-Dec. 2000)....	Syed Nazar Hussain Mashhadi
2000-2004 (Dec. 2000-Feb. 2004).....	Ch. Muhammad Rashid Khan
2004-2006 (April, 2004-Dec., 2006).....	Rana Muhammad Saeed Ahmad Khan

## NAME OF SECRETARIES

<b>1912-14</b> .....	<b>No Record</b>
1914-15 .....	No Record
1915-16 .....	No Record
1916-17 .....	No Record
1917-18 .....	Mr. W.S. Dorman M. Inst CE
1918-19 .....	No Record
1919-20 .....	Mr. W.S. Dorman M. Inst. CE
1920-21 .....	Mr. J.H.T. Middleton
1921-22 .....	Mr. A.R. Astbury M. Inst. CE
1922-23 .....	Mr. A.R. Astbury M. Inst. CE
1923-24 .....	Mr. D.J. Morris, Assoc, M. Inst. CE
1924-25 .....	Mr. D.A. Howell, Assoc, M. Inst. CE
1925-26 .....	Mr. C.A. Colyer Assoc, M. Inst. CE
1926-27 .....	Mr. C.A. Colyer Assoc, M. Inst. CE
1927-28 .....	No Record
1928-29 .....	Mr. John Peterson Gunn M.A. B.Sc.
1929-30 .....	No Record
1930-31 .....	Mr. Ainsley Marshall Rendall, AMICE
1931-32 .....	Mr. John Hinton Fletcher, NC
1932-33 .....	Mr. John Peterson Gunn
1933-34 .....	Mr. Raj Behari Seth
1934-35 .....	Dr. E. Mckenzie Taylor, MBE
1935-36 .....	Dr. E. Mckenzie Taylor, MBE
1936-37 .....	Mr. Thomas William Robertson Easton
1937-38 .....	Mr. Wilfered John Benson, AMICE
1938-39 .....	Mr. Dev Chan Khanna
1939-40 .....	No Record
1940-41 .....	Mr. Dev Chan Khanna
1941-42 .....	Mr. Sita Ram Mehra A.M, Inst. CE
1942-43 .....	Mr. Sita Ram Mehra A.M, Inst. CE
1943-44 .....	Mr. Karnail Singh
1944-45 .....	Mr. Karnail Singh
1945-46 .....	No Record
1946-47 .....	No Record
1947-49 .....	No Record
1949-51 .....	Mr. A.M. Malik, MBPSEI
1951-52 .....	Mr. A.M. Malik, MBPSEI
1952-54 .....	Mr. R.F.T. Farrant, PSEI
1954-55 .....	No Record
1955-56 .....	Mr. Saeed Ahmad
1956-57 .....	Mr. Saeed Ahmad
1957-58 .....	Mr. H.J. Asrar, PSEI
1958-59 .....	Mr. H.J. Asrar, PSEI
1959-60 .....	Mr. H.J. Asrar, PSEI
1960-61 .....	Mr. A.A. Jamal-ud-Din, PSEI
1961-62 .....	Mian Shamim Ahmad, PSEI
1962-63 .....	Mian Shamim Ahmad, PSEI
1963-65 .....	Mr. I.A.S. Bokhari, PSEI
1965-66 .....	Mr. C.A. Vali PRS
1966-68 .....	Syed Fayyaz Ali Shah, PSEI
1968-69 .....	Mr. Sarfraz Khan Malik, PSEI
1969-71 .....	Mr. Abdul Latif Mirza, PSEI
1971-72 .....	Malik Muhammad Ahsraf, PSEI
1972-74 .....	Mian Iftikhar-ud-Din
1974-75 .....	Sh. Nisar-ul-Haq
1975-78 .....	Sh. Nisar-ul-Haq
1978-80 .....	Sardar Allah Bukhsh
1980-82 .....	Mr. M.R. Chaudhry
1982-83 .....	Ch. Muhammad Rashid Khan
1983-85 .....	Syed Nazar Hussain Mashhadi
1985-86 .....	Dr. Izhar-ul-Haq
1986-87 .....	Syed Nazar Hussain Mashhadi
1987-89 .....	Ch. Muhammad Khurshid
1989-92 .....	Dr. Izhar-ul-Haq
1992-94 .....	Mian Iftikhar-ul-Haq
1994-96 .....	Dr. Izhar-ul-Haq
1996-98 .....	Mr. M. Rafiq Shad
1998-2000 .....	Syed Mansoob Ali Zaidi
2000-2004 .....	Ch. Ghulam Hussain
2004-2006 .....	Syed Mansoob Ali Zaidi

## **A BRIEF ABOUT ENGR. RANA MUHAMMAD SAEED AHMAD KHAN, PRESIDENT OF PAKISTAN ENGINEERING CONGRESS**

Mr. Rana graduated in Civil Engineering in 1955 from the Punjab College of Engineering & Technology, Lahore. He joined WARSAK Dam Project Organization in 1956 and then joined West Pakistan Public Works Department as Assistant Engineer in 1957. But he was immediately sent back on deputation to WARSAK Dam Organization on directions from the Federal Government due to his studious working on the Project where he stayed till completion of the Dam. On return to the parent department considering his construction experience he was posted as Sub Divisional Officer Lahore Stadium presently known as Qaddafi Stadium.

He got his Post Graduation from Canada in 1967 in the Field of Environment Engineering. On return from Canada he was posted in WASA LDA as a Senior Engineer where he looked after the construction programme of Greater Lahore Water Supply and Sanitation works under the World Bank Loan. He has participated in numerous International Seminars.

Mr. Rana served as Deputy Secretary Planning in the Department of Local government from 1974 to 1975 responsible for planning and processing schemes for approval of Public Health Engineering Department.

Mr. Rana was selected by the Government of Saudi Arabia as Public Health Engineer on secondment and was posted as water Supply Engineer in TABUK Cantonment where he served from 1975 to 1976. On return he served as Superintending Engineer in the Public Health Department, Punjab for 10 years prior to posting as Technical Advisor in the Department of Housing & Physical Planning Govt. of the Punjab.

He was appointed by the Government of Pakistan as Convener of the National Experts Group in 1984 for preparation of National Environmental Quality Control Standards and infrastructure for environment Protection Agencies at Federal as well as Provincial levels after the promulgation of the Pakistan Environmental Protection Ordinance 1983. The Report of the experts Group was accepted by the Government of Pakistan and in appreciations, honorarium was awarded to the Experts Group. Mr. Rana was pioneer in establishing EPAs in Pakistan and was the First Director General of EPA Punjab (1987-1989) where he formulated environmental standards for various pollutants and started industrial survey in Punjab. Mr. Rana was also Member of the Expert Advisory Committee constituted by the Government of Pakistan on Rationalization of National Environmental Quality Standards.

He is a member of the standing Committee of Govt. of Pakistan for revision of quality standards and implementation thereof.

Mr. Rana served as Chief Engineer PHED Punjab from 1989 till his retirement in 1992. During his tenure as Chief Engineer, a number of Water Supply and Sewerage Schemes were implemented. The important works worth mentioning were the augmentation of Water Supply Schemes to Murree from Dhar Java Haro River and Water Supply Scheme of Chakwal.

After superannuation Mr. Rana continued his professional Career as Public Health Engineer in the Private Sector. He worked as General Manager of Public Health Engineering Division, National Development Consultants (NDC) for four years where, in addition to the local consultancy jobs the feasibility of Water supply and sanitation schemes for Atolls, Maldives under Islamic Development Bank assistance was also prepared by him. Mr. Rana is Presently President of Pakistan Engineering Congress.





## TABLE OF CONTENTS

Sr. No.	Paper No.	Title of Paper	Author's Name	Page No.
01.	658	Role of Water Resources Development in the Economy of Pakistan	M. Mushtaq Chaudhry, Dr. Muhammad Siddique, Dr. Allah Bakhsh Sufi	01
02.	659	Sedimentation of Tarbela & Mangla Reservoirs	Dr. Izhar-ul-Haq, S. Tanveer Abbas	23
03.	660	Analysis of Different Models to predict the mean flow velocity in Hyperconcentrations, Mudflows and Debris Flows	Engr. Hammad Hussain, PE	47
04.	661	Use and Limitations of Sprinklar and Drip Irrigation Systems in Pakistan	Dr. Muhammad Mehboob Alam, Dr. Muhammad Nawaz Bhutta Dr. Aftab H. Azhar	77
05.	662	Damages to the right pocket of Sukkur Barrage and Emergency Restoration Works (2004-2005)	Barkat Ali Luna, Malik Ahmad Khan, Ch. Muzaffar Hussain, Dr. Muhammad Salik Javed	97
06.	663	Geotechnical Evaluation of a Morning Glory Spillway Failure Founded on Expansive and Dispersive Clay	Farhat Javed, Brig. Asghar Nasim	143
07.	664	Resettlement aspects of Mangla Dam Raising	Muhammad Saleem Sheikh	157
08.	665	Second Remodelling Proposed for Balloki Headworks	Muhammad Aslam Chohan	173
09.	666	Environmental Management Concerns in Water Sector and Institutional Capabilities	Engr. Muhammad Shafiq	221
10.	667	Meeting Future Food Demands of Pakistan under Scarce Water Situations	Shehzad Ahmed, Naveed Alam, Abdul Shakoor, M. Kaleem Ullah	237

<b>Sr. No.</b>	<b>Paper No.</b>	<b>Title of Paper</b>	<b>Author's Name</b>	<b>Page No.</b>
11.	668	Numerical Simulation of Canals Irrigation Systems in Pakistan	Mazhar Hussain	249
12.	669	Tackling Landslides during extension of KKH	Engr. Sohail Kibria, Basit Masud	263
13.	670	Self-Compacting Concrete - A Useful Technology	Syed Ali Rizwan, Thomas A Bier, Husnain Ahmad	293
14.	671	Effect of Temperature and Ph On the binding of Chloride by Calcium Aluminate	S.E. Benjamin	319
15.	672	Engineering and Entrepreneurial Thrust	Dr. S. M. Naqi	335
16.	673	University-Industry linkage for the rapid growth of Engineering Industries in Pakistan	Air Commodore (R) Mansoor Malik	351
17.	674	Grid Computing: Potential Opportunities for Pakistan	Dr. Arshad Ali	361
18.	675	Developing Countries and Intellectual Property Rights	Saad Nusrullah	381
19.	676	Synthesis and Applications of TiO <sub>2</sub> Nanoparticles	Dr. A. Ahmad, Gul Hameed Awan, Salman Aziz,	403
20.	677	A Study on Thermal Cracking of Cast Iron	Dr. M. Yousaf Anwar	413
21.	678	Sustainable Pakistan through Matching Grant Programme: 21 <sup>st</sup> Century Vision	Qamar-ul-Islam Dr. Awais Piracha, Muhammad Shahzad	423
22.	679	Comparative Study of Nylon and PVC Fluidized Bed Coating on Mild Steel	R. Ahmad, S. Aziz, J. Iqbal	437
		List of Previous Papers Presented at Proceedings		449