Annexure 1
Details of Job Description

S. No.	Designation	Domain	Skill Set Required	Qualification and Experience	Number of candidates (Note 1)	Pay Grade	Location
1	Scientist B/C/D	Quantum Communication	• Strong theoretical background in quantum communications • Expertise in analyzing QKD protocols (& security proofs for the same) and support teams implementing the same • Practical QKD implementation experience is desirable • Good understanding of various types of attack strategies on different QKD protocol implementations • Should have a thorough knowledge of quantum mechanics in general and all aspects related to quantum communications in particular • Strong documentation and presentation skills; must be proficient in relevant software tools used in the same	• B.E./B.Tech. (ECE or Engineering Physics) / M.Sc. (Physics) / M.E./M.Tech. and/or PhD with specialization in optical communication / quantum mechanics / quantum communication (with a minimum of 60% throughout the academics) • Minimum 2 years experience (industry/academic) (Not mandatory for candidates having a PhD)	2	Level 10/11/12 of 7-CPC based on experience	Delhi

2		Optical Communication	• Strong optical communication fundamentals • Experience in designing optical communication products • Good theoretical and practical knowledge of optical devices used in optical communications and quantum communications • Good board design skills and proficiency in tools used for the same • Strong analog design concepts and proficiency in tools used for the same • Strong documentation and presentation skills; must be proficient in relevant software tools used in the same	• B.E./B.Tech. (ECE)/ M.E./M.Tech. (ECE)/ M.Tech (Optical Communication)/ PhD (in relevant areas) (with a minimum of 60% throughout the academics) • Minimum 2 years experience (industry/academic) (Not mandatory for candidates having a PhD)	2		
3		FPGA Design for QKD Related Applications	• RTL coding and simulation in Verilog, VHDL or System Verilog • Good coding skills in C, C++, python and shell script (bash) • Good knowledge of Xilinx /Intel-Altera FPGA architecture • Exp. with FPGA synthesis tool- Xilinx Vivado, Altera Quartus Prime or similar,	• B.E./B.Tech. (ECE/CS/EE/EI/IT/VLSI) or M.Sc. (Physics) or M.E./M.Tech (ECE/CS/EE/EI/IT/VLSI/CE/Optical Communication)/ PhD (in relevant areas) (with a minimum of 60% throughout the academics) • Minimum 2 years experience (industry/academic) (Not mandatory for candidates having a PhD)	2		

			• IP Core development, High-level synthesis design flow, Logic acceleration & optimization • Experience in creating placement and timing constraints, synthesis, place and route, static timing analysis/FPGA timing closure and in-system debugging using ILA/SignalTap • Good knowledge of FPGA processor subsystems, Linux operating system internals and Linux device driver development • Knowledge of AMBA-AXI, PCI-E Gen 4, Ethernet, I2C, SPI, MII/MDIO interfaces • Knowledge of TCP/IP Protocol Suite, Control Protocols such as DNS, DHCP, HTTP, HTTPS etc. • Knowledge of • IP packet debugging tools such as Wireshark, tcpdump, ping, traceroute, nmap etc. • Good knowledge of Ethernet/IP packet capture, packet parsing & striping, packet de-duplication, payload compression &				

			decompression, encryption & decryption etc. to be implemented using HDL for FPGA • Experience with high-speed network interface (SFP/QSFP) design in FPGA • Selected candidates will be responsible for working on FPGA hardware and development tools to accelerate various functions of an application using FPGA offloading				
4		Quantum Communication Software	• Object-Oriented software design. • Database design, development and performance tuning. • Knowledge of coding languages (C, C++, Python, JS, TypeScript) and web development frameworks. • Essential agile software development skills. • Software debugging (GDB, MS Visual Studio Code, Valgrind) and automated testing. • Preference will be given to candidates having experience in software development of QKD nodes and network.	• B.E./B.Tech. (CSE/ECE/IT/EE/EI)/ M.E./M.Tech. (CSE/ECE/IT/EE/EI)/ PhD (in relevant areas) (with a minimum of 60% throughout the academics) • Minimum 2 years experience (industry/academic) (Not mandatory for candidates having a PhD)	4		

			• Software development work experience using latest network security and cryptography protocols will be an added advantage.
			• Selected candidates will be responsible for:
			  • Development of embedded software for the key distribution process for QKD nodes.
			  • Enhancements in software for Network Manager and Integration testing in automated environment.				