

Serial No. N1319002

Enrollment No. 084010062

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

(Declared as Deemed to be University U/S 3 of UGC Act, 1956)

NOIDA



Upon approval of the Board of Management, hereby confers the Degree of

DOCTOR OF PHILOSOPHY

on

Pawan Kumar

in the Field of

PHYSICS AND MATERIALS SCIENCE & ENGINEERING

[Signature]
Registrar

Noida

17 June 2013

[Signature]
Vice - Chancellor

[Signature]

Registrar
K. P. Mangalam University
Sohna Road, Gurgaon, (Haryana)

[Signature]
Chancellor