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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEB 2019

PH. D. (MATHEMATICS): II SEMESTER

COURSE CODE: **13P1WMA232** MAX. MARKS: **15**

COURSE NAME: **MATHEMATICAL ANALYSIS**

COURSE CREDITS: **3** MAX. TIME: **One Hr**

NOTE: ***All questions are compulsory and carry equal marks. Carrying of mobile phone during examinations will be treated as case of unfair means.***

Q.1 Define the followings:

(i) Metric Space

(ii) Discrete Metric Space

(iii) Continuity in Metric Space

(iv) Limit Point

(v) Dense set

[1+1+1+1+1=5]

Q.2 (a) State and Prove "**Mean Value Theorem**".

(b) Suppose, it took 14 seconds for a thermometer to rise from -19^{0}C to 100^{0}C, show that at some time t=0 and t=14 second mercury is rising at the exact rate of 8.5^{0}C.

[3+2=5]

Q.3 Define "**Cauchy's Sequence**". Prove that in Metric space every convergent sequence is a Cauchy sequence but converse need not to be true.

[2+3=5]

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