Quantum Mechanico Revision (i) de-Broglie hypothesis and  $\lambda = \frac{h}{b} = \frac{h}{mu}, \quad E = \frac{b^2}{2m}$ p=2mE, E=1me2=eV, E = 3 pt ; E= kT, E= 1 pt (diff. cases to find Et hence red p) lly mathematical probability.
These are not em waves or soundway de-Broglie waves can travel with speed of light (in vaccum free space). (IV) Concept of wave packet - Superimprising of infinite waves anotisted with moving material gand leads to the concept of hereas Group of waves or wave packet will be Cautence Discuss the interesperence of Y = A singlet- kx Scanned with CamScanner

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/= 4/+ 42	
1 6.	

Final wavefunction 7

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	U<< C → non relativistic speeds
	Dispersion relation (relation for phase velocity)
	29/01/1) = 20 => 10 = 24. k
	ug = dw = d(2/p·k) dk = dk
	=> lg = 2lp + k d 2lp dk
	- Ug= Up + b d2p dx  dx dk
	Now k= 211
	$\frac{dR}{dt} = -\frac{27}{\lambda^2}$
	· 2/g = 2/p - > d2/p - dispersion selation.
	if due is +ve reg < rep Normal dispersion
	if drep = 0 reg = rep = C - no dispersa
- H	dep is -ve, ug > 24, Anomalous dispersion.  Scanned with Camscanner
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Max Bosn's interpretation of wave fr.

Niii) Y - wave fr. [Y] - probability density

3-D case - prob. then units y will be

vol.

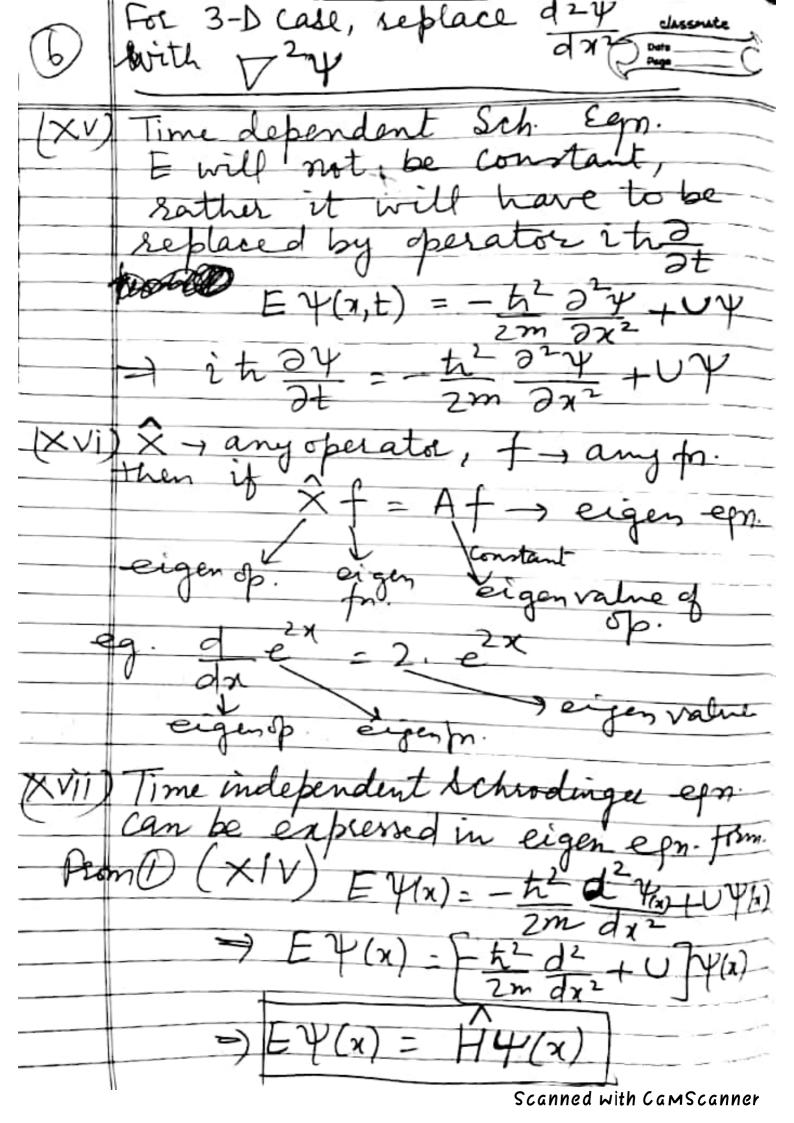
2-D -> prob.

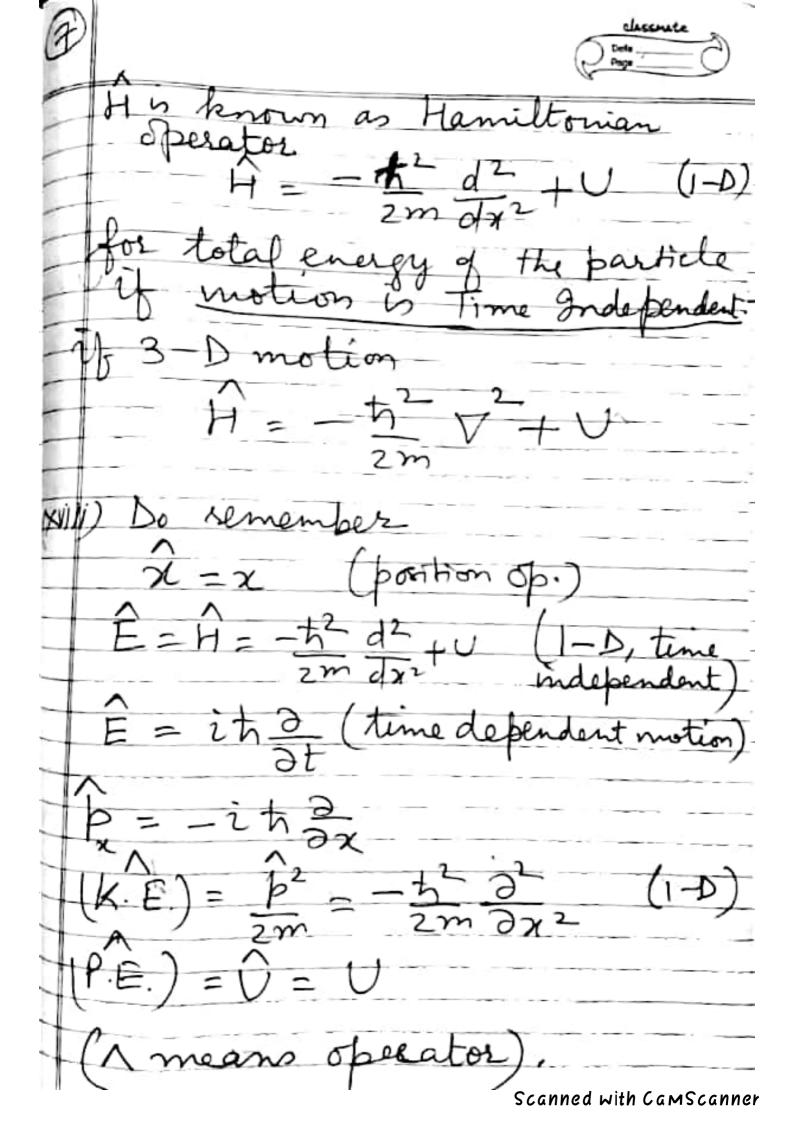
area - n n L 2 n L

length P is prob. density.  $\int_{A}^{\infty} PdA = 1 \longrightarrow \int_{A}^{\infty} |Y|^{2} dA = 1 \quad (2-D)$ Pdx=1 -> [14]2dx=1 (1-D) (b) should be single valued, finite valued, finite valued, tentinuous (c)  $\frac{34}{34}$   $\frac{34}{34}$   $\frac{34}{38}$   $\frac{3$ (x) Normalization means total prob. to locate particle in universe is 1. do numericals based on Normalization when we say normalize the were for, this means we have to find the ralue of A' in Y = A sin(wt-kx). De god = 0 = 1/4/2/20 => particle is not present in this universe. Scanned with Camscanner

= 3x+3y2+32 is laplace (xii) Schrodinger egn gives the egn of motion of the particle moving in a segion It is analogues to Newton's second law of motion the only difference is Newton's laws are only difference is Newton's laws and Schrödinges egn is for microropic basticles. I was in both are for relativistic Free particle , only K.E. Restricted particle, K.E+P.E. XIV) Time Independent Sch. Egn. (1-D) if free particle U=0 dx2+ 2m = 4(x)=0 =) d24 + k2 y(x) 20; which is same as eg. of motion of SHM-1 dez + Wo z =0; w= k Som is Y(x)= Asinkx+Bcoskx

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Application