Explain the proporties and applications of

(i) Al 203 (iii) Siz N4

(ii) Sic (iv) Psz.

(i) A 1203.

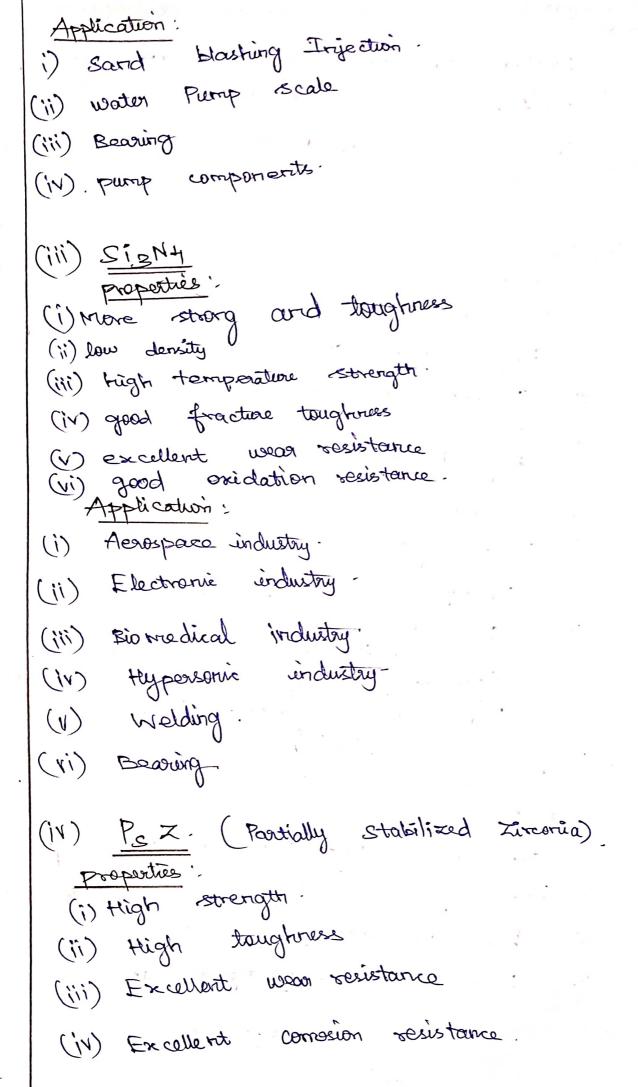
- (i) Electrical Insulator
- (ii) High thermal conductivity
- (iii) Insoluble in water
- (iv) Amphoteric
- (v) High hardress.

Application:

- (i) Fillers, glass
- (ii) Catalysis
- (iii) Gas purification
- (iv) Abrassive
- (V) Point and composite Fébres.

(ii) <u>Sic</u> proportees'.

- (i) substantially high thermal conductivity
- (ii) Low fracture resistance
- (iii) less resistance to acid
- (iv) Good resistance to argular abrasion.



Application!

- (i) Motal forming
- (ii) Gas and oil industries
- (iii) Remarkable strength.
- (iv) Cycle industry Application
- 1) B) Explain the principle, component preparation, deposition rate and coating materials of various plasma epraying methods.
 - (i) APS Artmosphair plasma spraying.
 - (11) VPS Vacuum plasma spraying.
 - (i) APS Atmospheric plasma reproging.

 A material is heated to high temperature in plasma are goverated at atmospheric pressure.

correponent preparation:

- (i) plasma Torch
- (ii) powder feeder.
- (iii) Gas supply.

The plasma Torch generates the plasma are, which heats the coating material to high temperature. The paudor feeder is used to feed the coating material into the plasma, where it melts and propelled onto the substrate gas supply is used to control shape and velocity of plasma are.

The Deposition of coating with thickness ranging from 30 micrometer to many millimeter in Dimension at temperature ranging ambient at 1200°C. The Deposition rate Different of on power of plasma Torch, flux. rate of powder feeder.

Cociting material:

- (1) motal allays
- (11) carbides
- (iii) Blords
- (iv) abradasiis
- (V) Oscide coramic
- (vi) coranius.

VPS - vacuum plasma espraying.

Vacuum plasma spraying is a thormal spray process used to deposit coaling on various surface in this process a material can be treated to high temperature in a vacuum chamber, creating plasma gas. This gas is distributed by the substrate.

component preparation.

component used are.

- (i) plasma Torch.
- (ii) powder feeder.
 - (111) a vacuum chambon.
 - (14) augori gas.

the plasma Torch generates plasma, which heats coating material to high temperature the

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powder feeder is used to feed wating material into plasma. where it melts and propelled into substrate. the vaccum chamber is used to create a low pressure environment, so that material do not React with din.

Deposition Rate

- (i) Depends on various factors (a) power of Torch
 - (b) fuel Rate of powder.
 - () Distance between torch and and substrate
- (ii) higher power plasma torches and high fuel Rate of power can increase the oper Deposition Rate.

coating Material: (i) Cenamics

- (ii) motal
- (iii) alloys -

The coaling material must be able to withstard high temperature generated by plasma torch and have good adhesive proporties to substrate. The coating material must have good useas Resistance, good comosion resistance (or) thround insulation.