NAME GROUP ENTRY No

DEPARTMENT OF TEXTILE TECHNOLOGY

Major Test, TTL212

Manufacture Fibre Technology

29th April 2008 **Total Marks: 22**

PART A: ANSWER ALL THE QUESTIONS

Q1. (a) Why Spinning speeds are in the following order: (2)
Wet spinning<dry spinning<melt spinning

(b) Prior to solid-state polymerization of PET, why do we need to heat the chips? (0.5)

Q2 Which of the following conditions are useful for obtaining high mol wt acrylonitrile. Give reasons for each (1.5×2=3)

a) Reactivity ratios are kept less than one

b) Solution polymerization is carried out in NaSCN

Q3 a) Write the chemical reactions involved in polymerizing PET using TPA (PTA) route. Give reaction conditions and catalyst used.(no explanation is required) (2)

b) Continuous two stage polymerization of nylon 6 by modified process is better than one stage VK tube process. (3)

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Q4. Calculate the no avg. degree of polymerization with an end group conc. of $[NH_2]$ = 120 Eq /ton and [COOH]=20 eq/ton.

What kind of dyeing property will this nylon show?

(1.5+0.5)

Q5 Justify the following statements- (1.5×3=4.5)

a) Lyocell spinning dope is prepared by in compositions poor in water, but initially it is necessary to take more water..

b) For the acetylation of cellulose acetic anhydride is used not acetic acid.

c) Diacetates are made by hydrolyzing triacetates and not through direct substitution?

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Q6 a) How is the fibre formation in gel spinning conceptually different from normal wet spinning? (2)

b) Write the repeat unit for a Elastomeric fibre polymer and indicate the hard and soft segments. (1)

Q7. State whether the following statement is **true or false**. Also give reasons or explanation in support of your answer.

Coagulation conditions greatly influence both the crystallinity and orientation in a solution spun fibre. (2)