2018 Asia and Pacific Mathematical Contest in Modeling

Problem B

Talents and Urban Development

Inviting wits and attracting talents is one of the highlights for many cities over the past couple of years. Beijing, Shanghai, Wuhan, Chengdu, Xi'an, and Shenzhen are actually competing for talents with various attractive policies. Talents represent the motive power for the innovative development of cities because of their ability to learn better skills, make better products, and master better management methods within a shorter time. Talents are the major driver for urban innovation diffusion, since innovation diffusion is achieved by promoting new processes and technologies through high-quality talents are the media. In cities today, talents are recruited via the internet, on-campus job fairs, and open recruitment events in addition to local talent markets.

Annex is the job demand data of one of the largest municipal-level job markets in A-City (named "job market of A-City").

Question 1: Model and analyze the talent demand of the "job market of A-City" from job demand, the desired profession, and the desired educational background based on the data attached.

Question 2: Try to build a model of the actual talent demand of A-City with from the perspectives of the talent demand of the "job market of A-City" and the employment status of Chinese students based on the data attached and other necessary data available, and predict and analyze the potential talent demand of A-City in the next three years to come.

Question 3: Try to infer the administrative category, possible geographical area, economic position, and hi-tech industry development of A-City using the data and conclusions from Question 2.

Question 4: Recent years, there have shown some new career preferences of college students, such as entering for village officer examinations, taking civil service examinations, starting their own businesses, picking up offsite jobs, and studying overseas. These preferences help diversify the career opportunities for college graduates. Try to model and quantify this phenomenon and provide strategies for the urban development and talent introduction for A-City.

Question 5: Please write a letter to the school authorities about your suggestions and opinions regarding to the talent training program of a major you know well, covering the curriculum construction, the training of applicative talents, the individualization of college students, and the corresponding quality guarantee measures within the framework of your university and that major, according to the current market demand for talents.