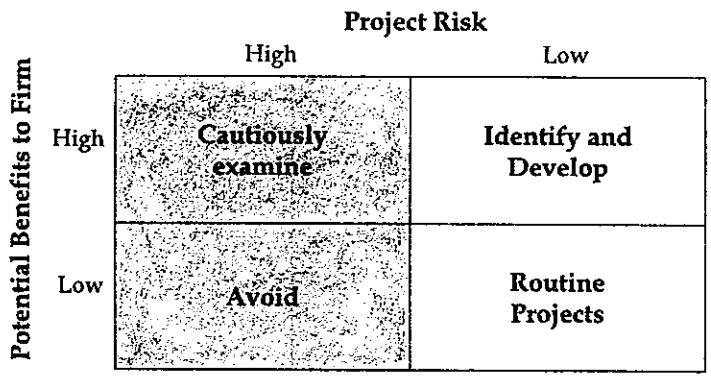
請於答案卷上依序作答，並註明作答的題號

試卷共四大題

1. Please answer the following questions related to IT project investment.
   (a) To evaluate whether to invest in an IT project or select among competing IT investment projects, firms often employ capital budgeting methods to support this investment decision making. Common capital budgeting methods include payback method, return on investment (ROI), cost-benefit ratio, etc. While popular, capital budgeting methods have several shortcomings. Please identify **at least four** shortcomings of capital budgeting methods. **(8%)**

When a firm has multiple IT projects (either current or potential), the firm can employ the portfolio analysis method to evaluate the appropriateness of the portfolio of IT projects or to decide what types of IT projects to invest in the future. The portfolio analysis approach first assesses each IT project along the following two dimensions: potential benefits to firm and project risk of the IT project. Accordingly, as the following figure illustrates, each IT project can be classified into one of the following categories: avoid, cautiously examine, routine projects, or identify and develop. For example, if an IT project is with low-benefit but high-risk (i.e., in the "avoid" category), this IT project should be totally avoided.



Besides evaluating individual IT projects, this benefit-risk classification of IT projects allows CIOs (or CEOs) to determine the optimal mix of IT investments for their firms. The optimal mix of IT investments is affected by the firm's competitive strategies, the characteristics of the industry to which the firm belongs, and so on.

(b) When a firm pursues a cost-leadership strategy, which category (or categories) of IT projects should the firm invest more? Please provide detailed explanations to justify your answer. **(9%)**

(c) Some studies suggest that "if a firm is in information-intensive industries (e.g., finance), the firm should have more high-risk, high-benefit IT projects (i.e., the

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'cautiously examine' category). Why should firms in information-intensive industries have more high-risk, high-benefit IT projects? **(9%)**

2. Please answer the following questions related to Internet of Things (IoT).
   (a) What are the information privacy issues of IoT? Why these issues are important? Please give **two examples** from different application domains (e.g., smart manufacturing, smart city, smart home, smart vehicle, etc.) to illustrate information privacy threat (risk). **(12%)**
   (b) What are object safety and security issues in IoT? Why these issues are important? Please give **two examples** from different application domains (e.g., smart manufacturing, smart city, smart home, smart vehicle, etc.) to illustrate object safety and security threat (risk). **(12%)**

3. Developing and deploying a software system is complex and risky. A good practice is to execute different tests to reduce the risk. Examples include unit testing, integration testing, user acceptance testing, and usability testing. Please compare and contrast important testings in various stages of the systems development life cycle and focus on important aspects such as the main purpose, the timing, who is responsible for running the test, and the environment in which the test should be executed. **(25%)**

4. User interface (UI) design is critical for a successful and easy-to-use application. To achieve this goal, the development team should adopt the so-called user-centered design and follow the general user experience and user interface design heuristics.
   (a) What is user-centered design? What are the principles for a user-centered design process? **(10%)**
   (b) List and explain **at least four** well-known user experience and user interface design heuristics. **(15%)**

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