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*Define the following:*

#### An n-person game in extensive form. (3 Marks)

#### A pure strategy. (3 Marks)

#### A saddle point. (3 Marks)

#### For a two-person zero-sum game

#### What is a mixed strategy? (3 Marks)

#### What is a maximin strategy? (2 Marks)

#### What is a minimax strategy? (2 Marks)

#### Using the definitions in (a), state the Minimax Theorem

#### What is domination and how is it used to compute optimal strategies?

# Quality

### 2018

#### Explain why professional software is not just the programs that are developed for a customer.

#### Explain how standards may be used to capture organizational wisdom about effective methods of software development. Suggest four types of knowledge that might be captured in organizational standards.

#### What are the important differences between the agile approach and the process maturity approach to software process improvement?

#### Describe three types of software process metric that may be collected as part of a process improvement process. Give one example of each type of metric.

### 2017

#### In the context of the Capability Maturity Model Integration (CMMI) identify and describe the relationship of the following terms to each other: Process Area, Specific Goals, Generic Goals, Specific Practices, Generic Practices, Typical Work Products, and Sub-practices.

#### Explain why program inspections are an effective technique for discovering errors in a program. What types of error are unlikely to be discovered through inspections?

#### Describe three types of software process metric that may be collected as part of a process improvement process. Give one example of each type of metric.

### 2016

#### Explain how standards may be used to capture organizational wisdom about effective methods of software development. Suggest four types of knowledge that might be captured in organizational standards.

#### What are the important differences between the agile approach and the process maturity approach to software process improvement?

#### Describe three types of software process metric that may be collected as part of a process improvement process. Give one example of each type of metric.

# Risk Management

### 2016

#### Fixed-price contracts, where the contractor bids a fixed price to complete a system development, may be used to move project risk from client to contractor. If anything goes wrong, the contractor has to pay. Suggest how the use of such contracts may increase the likelihood that product risks will arise.

#### Cost estimates are inherently risky, irrespective of the estimation technique used. Suggest five ways in which the risk in a cost estimate can be reduced.

#### A software manager oversees the development of a safety-critical software system, which is designed to control a radiotherapy machine to treat patients suffering from cancer. This system is embedded in the machine and must run on a special-purpose processor with a fixed amount of memory (256 Mbytes). The machine communicates with a patient database system to obtain the details of the patient and, after treatment, automatically records the radiation dose delivered and other treatment details in the database.

#### The COCOMO method is used to estimate the effort required to develop this system and an estimate of 26 person-months is computed. All cost driver multipliers were set to 1 when making this estimate.

#### Explain why this estimate should be adjusted to take project, personnel, product, and organizational factors into account. Suggest four factors that might have significant effects on the initial COCOMO estimate and propose possible values for these factors. Justify why you have included each factor.