

# 西安电子科技大学

考试时间 120 分钟



SAD

## 试题

题号	一	二	三	总分
分数				

1. 考试形式: 闭卷; 2. 考试日期: 2020 年 8 月 日; 3. 本试卷共 3 大题, 满分 100 分。

班级 \_\_\_\_\_ 学号 \_\_\_\_\_ 姓名 \_\_\_\_\_ 任课教师 \_\_\_\_\_

NOTE: Write all answers on the answer sheet.

### Q.1: Multiple Choice (20points)

1. A system A is usually has the higher priority on key decisions in information system development.

业主 A. owner

B. designer

用户 C. user

后台 Back-off information system analyst with suppliers

2. C systems are front-office information systems which support business functions that extend out to the organization's customers.

库存 A. Inventory control

B. Human resources

C. Customer management

D. Manufacturing + Financial

3. "A standard system development process ('methodology') purchased or developed", which is belongs to CMM level C.

A. 1 Initial

B. 2 Repeatable

C. 3 Defined

D. 4 Managed

4. A D is the activity of documenting, managing, and continually improving the process of systems development.

A. project

项目管理 Scope, plan, staff, direct, control  
B. project management

C. system development

D. process management

敏捷 C integrates various approaches of systems analysis and design for applications as deemed appropriate to the problem being solved and the system being developed.

IE A. Information engineering MDA

B. Structured analysis MDA

多种方法 混合任一种  
D. Agile method

D. Rapid analysis 快速分析方法 快速架构分析 逆向工程 reverse

6. When performing "observation" fact-finding method, B is NOT appropriate?

A. obtain permission from appropriate supervisors or managers

观察指南 Don't make some assumptions 不要先入为主 不要做假设

C. keep a low profile 保持低调

D. don't focus heavily on trivial activities 抓住关键

不重要的

平凡的

take notes 及时记录

通知被观察者 提前预约

不要打断别人工作





从 problem 到 possible causes

从问题到可能的原因

发现分析问题

问题分析阶段: case-effect analysis 因果分析

7. A is a graphical tool used to identify, explore, and depict problems and the causes and effects of those problems.

A. Ishikawa (Fishbone) diagram 鱼骨图, 因果分析图

C. Gantt chart

B. PERT chart

D. Workflow diagram

ES	EF
LS	LF

8. C defines the minimum and maximum number of occurrences of one entity that may be related to a single occurrence of the other entity.

A. Subsetting criteria 子集规则 (比如按性别)

B. Generalization 泛化 超类

C. Cardinality 基数

按民族

D. Degree 度

递归联系的度

9. B is a process model used to depict the flow of data through a system and the work or processing performed by the system.

A. Flow chart 流程图

B. Data flow diagram DFD 数据流图 (结构化分析中使用)

C. Activity diagram

D. E-R diagram (信息工程) IE

10. A is a measure of how well the solution will work in the organization. It is also a measure of how people feel about the system/project.

A. Operational feasibility 操作

B. Economic feasibility 经济可行性

C. Schedule feasibility 时间

D. Technical feasibility 技术

11. A(n) B relationship is used to model the association between two classes: To indicate that when a change occurs in one class, it may affect the other class. To indicate the association between a persistent class and a transient class.

A. inheritance 继承 上下级

B. dependency 依赖

C. aggregation 聚合 (松散 has-a 迭代过程)

D. composition 组合 (紧密的整体与局部 contain-a)

12. The B approach is an iterative process involving a close working relationship between the designer and the users, to generate a (small-scale, incomplete, but working sample of a desired system).

A. information engineering

B. prototype 原型

C. object-oriented design

D. rapid application development

13. Data partitioning truly distributes rows and columns of tables to specific database servers with little or no duplication. A assigns different columns to different servers.

A. Vertical partitioning 垂直分区列

B. Horizontal partitioning 水平分区行

C. Orthogonal partitioning

D. Top-down partitioning

14. A is the process of translating the source data or document into a computer readable format.

A. Data entry 输入

B. Data mining 数据挖掘

C. Data process 从机器可读形式输入数据的

D. Data capture 捕获 identification and acquisition 识别数据 new data 在源

15. D is an internal output that presents information with little or no filtering.

A. Daily report 内部输出

B. Summary report 摘要: 对信息进行分类

C. Exception report 过滤详细信息

D. Detailed report 详细报告 很少过滤信息

16. In A processing, the entered data is collected into files called batches and processed as a complete batch. 作为一个完整的批处理

A. batch 批处理

C. interactive

在线处理 B. on-line captured data is processed immediately  
远程批处理 D. remote batch  
↓  
data is entered and edited on-line, but collected into batches for subsequent processing  
数据是在线录入和编辑的, 但会将数据收集起来进行批量处理



GUI

17. According to Galitz, B does NOT result in confusion, panic, frustration, boredom, misuse, abandonment, and other undesirable consequences.

- A excessive use of computer jargon and acronyms 术语和缩写  
B obvious or intuitive design 不明显不直观的设计  
C inability to distinguish between alternative actions 无法区分不同的操作  
D inconsistent problem-solving approaches 不一致的问题解决方法

18. B objects that hold application or business rule logic.

- A. Process  
 B. Control

C. Entity represent actual data

19. The A relationship would be used to limit the message sending between objects to one direction.

- A association  
 B. navigability  
 C. visibility  
 D. directional

20. D models the logic of a use case by depicting the flows of messages between objects in message sequence.

- A. Class diagram  
 B. Activity diagram 流程图  
 C. Sequence diagram  
 D. Collaboration diagram 协作图

**Q.2: For each of the tasks listed below, draw a PERT chart and determine the critical path. (20 points)**

Activity ID	Activity Description	Duration (Weeks)	Predecessor
A	Preliminary investigation	1	None
B	Problem analysis	2	A
C	Data requirement analysis	3	B
D	Process requirement analysis	5	B
E	Logical database design	6	C
F	Normalized form analysis	4	C
G	Physical database design	3	E, F
H	Dataflow design	6	D, F
I	Interface design	4	G, H
J	System implementation	30	I
K	System testing	10	J
L	Installation	5	K

USE THE FOLLOWING NOTATION WHEN DRAWING THE PERT CHART.

Activity ID	
Early Start	Duration
Late Start	Slack Time





**Q.3: Given the narrative description, answer the questions. (60 points)**

The Xidian University Libraries is affiliated to Xidian University with 17 lending rooms (借阅室) in the two campuses. The manager has decided to redesign its collection material database named XLD. Currently, the database holds information on:

- ◇ Books, videos and CDs available for borrowing;
- ◇ Every item (book, video, CD) has a unique collection ID, a title, and an ISBN which is unique for every publication; every item may be in good order or damaged; note that if there are 10 copies of a single book, they have distinct collection ID, but identical ISBN; 状态

- ◇ Books can be in Chinese, English, or another language; in either case, the database stores the language the book is written in;
- ◇ Books have a publisher and one or more authors; CDs and videos have a unique producer, and one or more artists.

In addition, the database maintains data on library users and their borrowed material;

- ◇ Each user has a unique userID, address, phone; users can be teachers, postgraduate 名研究生身份 or undergraduate students; each user can borrow material for 45 days;
- ◇ When a user selects an item to be borrowed, the library clerk updates the database, recording userID, collection, and date of borrowing;
- ◇ When a user returns an item, the library clerk updates the database, recording the date when the item was returned; if the item is overdue, the clerk also collects a fine calculated as DaysLate \* fine/day; the fine per day amount is ¥0.10 for every user; the clerk also records the fine collected, if any; in addition, the clerk checks if the returned item is damaged, and if so, records this information;
- ◇ When a new material is purchased, it is catalogued (归类) (i.e., an entry is added to the database) and it is made available in some lending rooms. Damaged and unused material is removed from the collection. This is done once every six months;

(1) Draw the Context Data Flow Diagram and Functional Decomposition Diagram for XLD. (15 points)

(2) Produce an Entity Relationship Diagram (Logical Data Model) and a set of Normalized Tables for the scenario. (20 points)

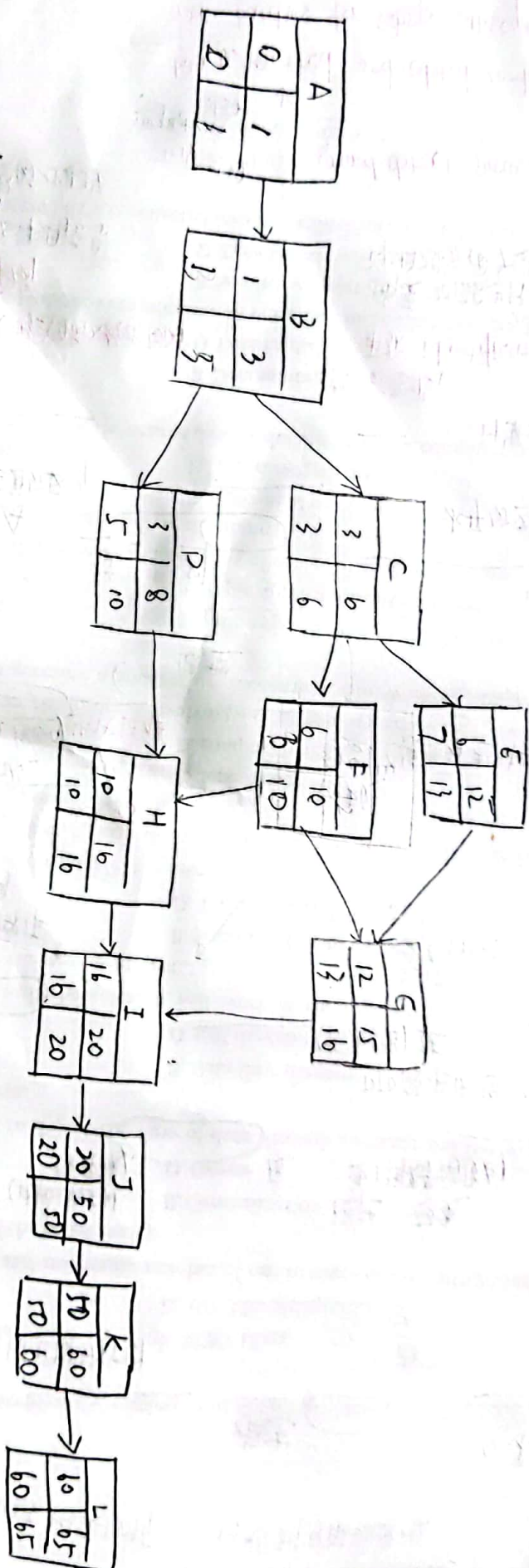
Sample table: Tblname (primarykey#, foreignkey#, attr1, attr2)

(3) It has been decided that the database will be developed using object oriented analysis and design (OOA/OOD) methodology.

- a) Draw a UML Use Case diagram for XLD and write the expanded description of ONE primary use case (表格形式). (15 points)
- b) Design an initial Analysis Class Model that shows the process and data required to support XLD. (10 points)



$A \rightarrow B \rightarrow C \rightarrow F \rightarrow H \rightarrow I \rightarrow J \rightarrow K \rightarrow L$



xLD

book(ID, title, ISBN, status, language, publisher, author)

video

CD

user(ID, address, phone, identity)

