Total Points: 40

Calculation of points for multiple choice questions: after the presentation of the question, the number of points (p) and the number of expected answers (n) is given. For each correctly selected answer p/n points are given. For each incorrectly selected answer p/n points are deduced. For missing answers 0 points are given (no points deduced). The total amount of points for a given question corresponds to the sum of points minus the sum of deductions. If the total for a question results in a negative number, the question will be evaluated with 0 points.

1. An organization uses a variety of activities to reach business goals and to sustain their business. In comparison to operations which of the following are characteristics that only project have? **(**2 answers, **1 point)**
    a. Progressively elaborated
    b. Unique Results
    c. Quality Assurance
    d. Require Human Resource
    e. Temporary

2. The Project Management Body of Knowledge (PMBOK) partitions project management knowledge into project management process groups and project management knowledge areas. Which of the following items is a project management process groups? **(**2 answer, **1 point)**
    a. Scope Management
    b. Planning
    c. Executing
    d. Time Management
    e. Cost Management

3. A Work Breakdown Structure (WBS) can serve as an input for other project management process. Which of the following processes can utilize WBS as an input? **(**2 answer, **1 point)**
    a. Creating Request For Proposal
    b. Developing Project Charter
    c. Cost Estimation
    d. Resource Allocation
    e. Creating Service Level Agreement

4. Quality planning is an important process to ensure the delivered software product has acceptable quality. Which two of the following activities is part of quality planning? **(**2 answer, **1 point)**
    a. Peer review
    b. Post-release bug fixing
    c. Perform unit testing
    d. Cause-effect analysis
    e. Conformance to quality standards

5. PMBOK recommends project management processes in different knowledge areas. For example, it recommends creating a WBS in Scope Management. In each process, PMBOK prescribes inputs, tools and techniques, and output. One of the most common inputs is organization process assets. Which two of the following aspects are considered to be software organization process assets? **(**2 answers, **1 point)**
    a. Code review guidelines
    b. Flat-organization hierarchy
    c. Java developers
    d. Coding convention
    e. Number of competitors

6. PMBOK prescribes inputs, tools and techniques, and output for project management processes. Which of the following items can be used as inputs to define project scope? **(**2 answers, **1 point)**
    a. Gantt chart
    b. Project Charter
    c. Request for Proposal
    d. Work Breakdown Structure
    e. Project Decomposition

7. In project management planning, one of they key processes is to develop a project schedule. It allows your project members to know what they have to do and when they have to do it. Which one of the following techniques can be used for such schedule development? **(**1 answer, **1 point)**
    a. COCOMO
    b. Gantt chart
    c. Critical Path Method
    d. Schedule Network Diagram
    e. Precedence Diagramming Method

8. Every project activity and document needs to serve a purpose. Which two of the following statements are purposes of developing a Work Breakdown Structure (WBS)? **(**2 answers, **1 point)**
    a. Document lessons learned
    b. Identify stakeholders
    c. Understand environmental factors
    d. Organize and define project scope
    e. Manage the project into manageable level of work

9. PMBOK states 5 areas of expertise required for a project team member. One of them is understanding project environment. Which of the following items are required for understanding a project environment **(**2 answer, **1 point)**
    a. Leadership skills
    b. Shared values and norms
    c. Conflict Management
    d. Understanding of project management knowledge areas
    e. Awareness of local laws and regulations

10. Activity sequencing allows project team members to know which activity to perform after another. Slack time and critical paths are concerns in such activity sequencing. What is the difference is between slack time and critical path? Why would you use lead time? Why would you use critical path? Please answer by providing the definition of the stated term, describing its purpose, providing an example, and justifying your answer!
    (a) Slack time **(1 point)**

    (b) Critical path **(1 point)**

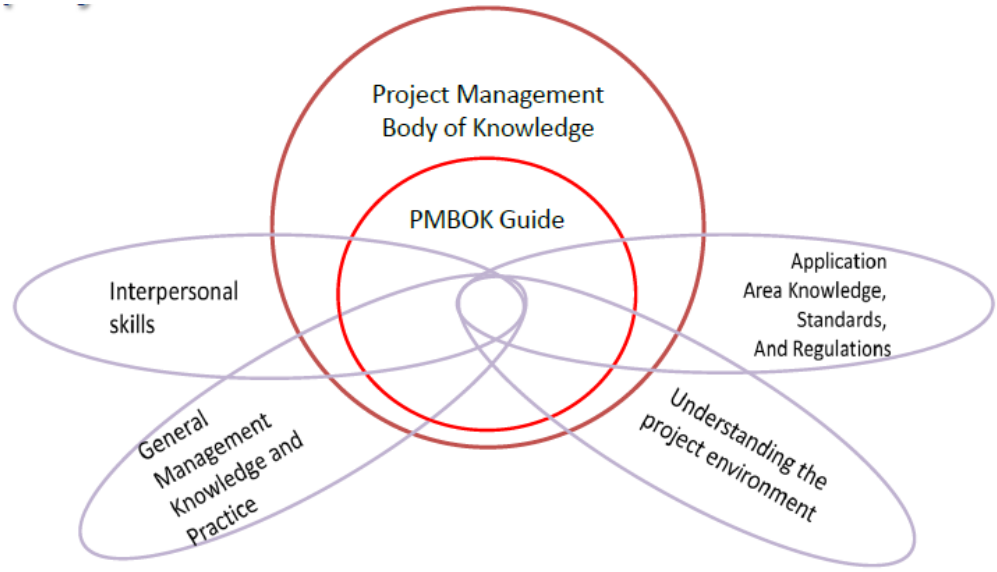
11. A software product company runs projects to develop or enhance software products. For example of Microsoft does so for Windows 8, Windows Mobile, XBOX 720, etc. What is the difference between a software project and a software product? Please answer by providing the definitions!
    (a) Software Project **(1 point)**

    (b) Software Product **(1 point)**

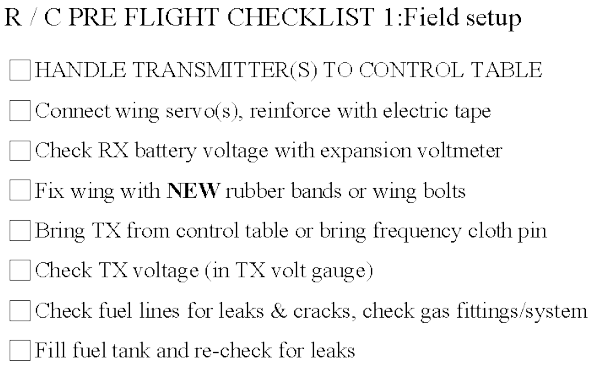
12. As part of systematizing technical work, managing deliverables, and controlling progress of a software project, a software development life cycle model is adopted. Examples of such models include Waterfall, spiral, incremental, and evolutionary development. The applicability a particular model is highly influenced by size of the project, nature of the product, etc. What is the difference between the Waterfall model and Agile development? What would be your motivation implement a Waterfall model? What would be your motivation to implement Agile development? Please answer the question by providing definition of the model, describing the situation which gives preference to using the model, providing an example, and justifying your answer!
    (a) Waterfall model **(1 point)**

    (b) Agile development **(1 point)**

13. PMBOK states the 5 areas of expertise needed by a project team shown the figure below. Why is it important for the software project team to understand "interpersonal skills"? What are the consequences if the software project team does not possess this expertise? **(1 point)**



14. Mini case: In civil and military aviation, aircraft checklist is essential for aviation safety. The purpose of a checklist is to ensure that the pilots are performing the tasks that are relevant to their situation, e.g., pre-flight, take-off, landing, or emergency situations. Example of a checklist is shown below.


R / C PRE FLIGHT CHECKLIST 1:Field setup

- ☐ HANDLE TRANSMITTER(S) TO CONTROL TABLE
- ☐ Connect wing servo(s), reinforce with electric tape
- ☐ Check RX battery voltage with expansion voltmeter
- ☐ Fix wing with **NEW** rubber bands or wing bolts
- ☐ Bring TX from control table or bring frequency cloth pin
- ☐ Check TX voltage (in TX volt gauge)
- ☐ Check fuel lines for leaks & cracks, check gas fittings/system
- ☐ Fill fuel tank and re-check for leaks

Currently pilots have to rely on paper-based aircraft checklists, which can be hundreds of pages long. Finding the right checklist for the situation and going through the steps the checklist can be cumbersome, particularly in emergency situations. The captain or the first office has to go through each step in the checklist, yet there is automated way to cross-check whether the item in the checklist has been performed or not.

Your software project development has been selected by BOEING to develop an electronic version of the aircraft checklist, called e-checklist. The pilot can access the e-checklist using a tablet-like device, which is also connected to the aircraft instruments. The e-checklist should be able to provide recommendations to the pilot which checklist to go through, so the pilot does not have to scramble in finding the right checklist. When a checklist is selected, the e-checklist should also provide information whether the step in the checklist has been performed or not, by checking with the aircraft instruments. In the case when a step is skipped or has not been performed, the e-checklist should sound a warning. It is highly important that the software adheres with safety requirements from the National Transportation Safety Board (NTSB) and Federal Aviation Administration (FAA). **Note:** Your company is only required to develop the software, all hardware required for e-checklist are provided by BOEING.

You are assigned as a project manager for this project.

a. Which software development life cycle model do you select for this project? Why do you think this is an adequate choice? **(1 point)**

b. Create a Work Breakdown Structure (WBS) and WBS dictionary for the project! **(1 point)**

c. Create a Gantt chart for the project! **(1 point)**

d. How will you allocate resources for the activities shown in the Gantt chart you provided from point c? **(1 point)**

e. Given the application domain area of the software product, quality is important. How do you plan to perform quality assurance for this project? Describe quality assurance activities you plan for in your project plan and quality assurance checks you consider at important milestones. **(2 points)**

15. Describe Herzberg’s motivation-hygiene theory and Lewin's force field analysis theory. Provide examples for the concepts used in these theories. Explain, how can we combine these two theories? **(4 points)**

16. Which factors have an influence on leadership style of a leader? Provide examples. **(1 point)**

17. Douglas McGregor published his now classic Theory X and Y in 1957. Explain the major concepts of this theory and why is it important to know from the managerial perspective. **(2 points)**

18. Give examples of intrinsic and extrinsic motivators. Which of these is more powerful in the context of software projects and why? **(2 points)**

19. Name different power tools that a leader may use, and describe the situations in which these tools are appropriate. Give a short explanation **(6 points)**

20. Describe the evolution stages of a team. **(1 point)**

21. What follows below are a number of statements that you need to answer. Only one answer is correct. Please, write an X over the correct answer. If you choose the wrong answer, then 0.5 points will be deducted. **(2 points)**

Statement	True	False
A manager should consistently behave according to Theory Y		
Respect is an esteem need		
Empirical studies have shown that there is no best style of leadership.		
A leader that makes a decision by himself and then simply announces it is always fails		