Question 1

Software design in 2025 goes beyond drawings on paper—it’s a **living process**. As a **process**, design involves continuous refinement, team collaboration, and integration of feedback at every stage of the system’s lifecycle. For example, when planning the Unified Student Experience Platform (USEP), design activities would include breaking down services (course registration, chatbots, events) and aligning them with university needs. As an **artifact**, design results in practical documents and diagrams. A **UML system overview** can show how academic, support, and community services connect, while an **ADR** can document why microservices were chosen over a monolithic approach. These artifacts ensure clarity and accountability.

**Relevant artifacts for USEP:**

1. **UML Diagram** — to represent how modules such as course registration, academic advising chatbot, and cultural events interact.
2. **Architecture Decision Record (ADR)** — to justify choices like adopting microservices and integrating AI for advising.

Question 2

The USEP design can leverage three major trends shaping modern platforms. **Microservices** allow the academic, support, and community modules to function independently—so a timetable update won’t disrupt club forums or the AI advisor. **AI assistants** make the platform smarter: an advising chatbot can help students choose courses, while financial aid alerts reduce the risk of missed payments. Finally, **sustainable architecture** ensures the platform isn’t just functional, but also future-proof. By using cloud hosting, auto-scaling, and energy-efficient deployment, USEP can serve thousands of international students while keeping costs and carbon impact low.

Question 3

Today, students must navigate multiple portals—one for courses, another for financial aid, and yet another for clubs or events. This fragmentation leads to frustration and lost opportunities. The **Unified Student Experience Platform (USEP)** solves this by creating a one-stop platform where academic, support, and community services are integrated. The expected results are clear: students are more likely to stay enrolled when services are simple (**student retention**), administrators spend less time fixing disconnected systems (**operational efficiency**), and the university gains valuable insights into student needs (**data-driven decision-making**).

Queston 4

Outsourcing in software development takes three main forms.

**Onshore outsourcing** involves hiring providers within the same country, ensuring cultural alignment and easier communication but at higher costs.

**Offshore outsourcing** engages providers in distant regions, often at lower costs but with risks of time-zone and cultural barriers.

**Nearshore outsourcing** lies in between, using teams in nearby countries with similar time zones and moderate cost advantages. For USEP, **nearshore outsourcing** is recommended, as it balances affordability with smooth collaboration, enabling effective development without sacrificing quality or communication.

Question 5

Many university platforms unintentionally exclude certain student groups. To avoid this, USEP must prioritize inclusivity. First, a **multilingual design** will allow students from different regions to interact comfortably with the system. Second, **universal accessibility standards (WCAG compliance)** must be implemented so visually impaired, hearing-impaired, or neurodiverse students can benefit equally. By embedding inclusivity in the design, USEP will foster a sense of belonging for all learners.

Question 7

**AI Opportunity:** AI can automate **loan repayment alerts and financial aid tracking**, reducing administrative workload while ensuring students don’t miss deadlines.  
**Ethical Concern:** The system may inadvertently expose sensitive financial data if security is not properly enforced, raising **privacy and data protection** concerns.