CONNECTED VEHICLES EXAMS

Directive: select the most relevant answer to each question (only one answer per question). No documents or electronic devices allowed

分数: 23/23

STUDENT INFORMATION

1. Full Name *

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62705

ACES DISRUPTIONS AND THEIR IMPLICATIONS

✓ **正确** 1/1 得分

3. What are the four disruption axes (ACES) transforming the automotive industry? *

- (●) *Autonomy, Connectivity, Electrification, Sharedmobility*
- ( ) *Autonomy, Cybersecurity, EnergySavings, SmartGrids*

- ○ *Accessibility, Comfort, Electrification, AdvancedSystems*
- ○ *Autonomy, Connectivity, CircularEconomy, Safety*

✓ **正确** 1/1 得分

4. How do ACES disruptions meet customer expectations? *

- ○ By accelerating the production process of vehicles.
- ○ By eliminating dependence on vehicle connectivity.
- ◉ By improving flexibility and personalization of user experiences.
- ○ By reducing the total cost of vehicle ownership

✓ **正确** 1/1 得分

5. Which societal and regulatory trends reinforce ACES disruptions? *

- ◉ Zero-emission regulations, road safety rules, and the rise of smart cities
- ○ The reduction of production costs and the absence of European standards
- ○ Outsourcing processes to avoid penalties
- ○ The growing popularity of internal combustion vehicles and analog systems

✓ **正确** 1/1 得分

6. What role does artificial intelligence (AI), specifically foundation models, play in the transformation of autonomous vehicles? *

- ◉ Enhancing the recognition of driving scenarios through foundation models for better assistance
- ○ Fully replacing human drivers in all driving contexts

- Ensuring predictive maintenance without human intervention
- Reducing the manufacturing costs of automotive sensors

ADVANCEMENTS IN EMBEDDED TECHNOLOGIES

✓ **正确** 1/1 得分

7. Why is vehicle electronic architecture evolving toward virtualization and microservices? *

- To simplify European regulations on embedded systems
- To increase vehicle weight while improving safety.
- To eliminate interactions between different electronic systems
- (●) To reduce hardware dependency and enable software updates

✓ **正确** 1/1 得分

8. What challenges are associated with vehicle electrification? *

- High costs of green energy and lack of regulations
- (●) Dependence on global lithium production and infrastructure limitations
- Battery overload and inefficiency of electric motors
- Lack of consumer demand and regulatory resistance

✓ **正确** 1/1 得分

9. How can vehicle electrification be optimized to meet both economic and environmental needs? *

- [x] By increasing battery energy density while reducing carbon footprints through technological innovations
- [ ] By excluding public charging infrastructure from development programs
- [ ] By adopting hybrid models as an intermediate solution solely for developed countries
- [ ] By limiting shared services to reduce charging cycles

✓ **正确** 1/1 得分

10. How does the Software-as-a-Service (SaaS) subscription model transform the economic strategies of automakers? *

- [ ] By fostering customer loyalty through regular hardware updates
- [x] By reducing acquisition costs while offering customizable, on-demand features
- [ ] By restricting user flexibility through expensive subscriptions
- [ ] By eliminating connectivity requirements for vehicle functionalities

✓ **正确** 1/1 得分

11. Why are Over-The-Air (OTA) updates essential in a software-driven economic model? *

- [ ] They reduce dependency on hardware suppliers by promoting open-source software
- [x] They ensure quick compliance with new regulations without physical intervention.
- [ ] They mitigate cybersecurity risks by disconnecting critical systems
- [ ] They increase customer costs without improving user experience

✓ 正确 1/1 得分

12. Why is collaboration between OEMs, regulators, suppliers, and infrastructure essential for ACES disruptions to succeed? *

- To avoid investments in risky innovations
- To minimize regulatory constraints and simplify production processes
- To ensure optimal coordination between embedded technologies, connected infrastructures, and user needs.
- To reduce the costs of connected services and security systems

✓ 正确 1/1 得分

13. What challenges do autonomous vehicles face in integrating effectively into smart urban infrastructures? *

- Limited adoption of international traffic data standards
- Over-reliance on existing power grid systems
- A lack of stable connectivity in dense urban environments
- A lack of interoperability between infrastructures, navigation systems, and municipal services

✓ 正确 1/1 得分

14. How does predictive analytics and monetization of data from connected fleets create strategic advantages for automakers? *

- By enhancing customer loyalty while optimizing production cycles based on predictive models
- By reducing dependency on connected infrastructures for software updates

- By offering a revenue stream through personalized services and user behavior analysis
- By enabling centralized vehicle monitoring to reduce physical maintenance needs

✓ **正确** 1/1 得分

15. How can electric vehicles contribute to stabilizing power grids in smart cities? *

- By reducing battery consumption during charging
- By introducing bidirectional systems like Vehicle-to-Grid (V2G) to balance consumption peaks
- By limiting vehicle usage during peak hours
- By avoiding integration with existing infrastructures

SKILLS AND DEVELOPMENT CYCLES

✓ **正确** 1/1 得分

16. What new skill sets are required to address the challenges of ACES innovations in the automotive industry? *

- Skills limited to traditional mechanical engineering
- Expertise in artificial intelligence and software engineering, particularly in algorithm development and cybersecurity.
- Knowledge focused exclusively on hardware production
- Experience only in supplier relationship management

✓ 正确 1/1 得分

17. How do incremental development cycles transform automotive design processes? *

- [x] By enabling continuous validation and regular updates aligned with evolving needs
- [ ] By limiting interactions between different development teams
- [ ] By simplifying updates through a reduction in functionalities
- [ ] By increasing design cycle duration to reduce errors

CYBERSECURITY AND INDUSTRIAL IMPACTS

✓ 正确 1/1 得分

18. What is the role of "defense-in-depth" cybersecurity in connected vehicles to limit cyberattack risks? *

- [ ] Using open-source software to limit targeted attacks on proprietary systems.
- [ ] Simplifying embedded systems to reduce vulnerability points
- [x] Implementing multiple layers of protection, including system isolation, hypervisors, data encryption, and real-time monitoring
- [ ] Completely isolating critical systems by disconnecting them from external networks

✓ 正确 1/1 得分

19. How does the concept of digital twins improve the design and maintenance of modern vehicles? *

- [ ] By limiting data collection for security reasons

- By reducing vehicle customization to make them more standardized
- By eliminating the need for physical tests through real-time virtual simulations
- By accelerating production cycles without user feedback

✓ **正确** 1/1 得分

20. How does the transition to software-driven and electrification-centered production impact industrial development cycles? *

- By removing constraints related to supplier management through generic hardware platforms
- By requiring a redesign of production lines to integrate software engineering skills and adapt to OTA updates
- By reducing costs through the elimination of incremental validation cycles
- By simplifying production lines through the elimination of embedded system interactions

ENVIRONMENTAL IMPACTS AND EMERGING BUSINESS MODELS

✓ **正确** 1/1 得分

21. What are the primary challenges for autonomous vehicles within smart cities? *

- Over-reliance on green energy systems
- Lack of interoperability between urban traffic management systems, connected infrastructures, and vehicles
- Low adoption rates of electric vehicles in urban environments.

- ○ High technology costs and lack of regulations

✓ **正确** 1/1 得分

22. How does data monetization from connected fleets generate new revenue streams? *

- ○ By outsourcing data management to third-party providers
- ○ By reducing investments in connected infrastructure
- ○ By fully replacing vehicle sales with service-based models
- ◉ By enabling automakers to offer predictive services, personalized subscriptions, and partnerships for data analysis

✓ **正确** 1/1 得分

23. What new business models emerge in the automotive industry with the shift to electric and connected vehicles? *

- ○ The elimination of leasing models in favor of direct sales
- ○ The traditional cash-sale model with included warranties
- ◉ Subscription-based models for connected services, software updates, and on-demand feature access
- ○ Total dependence on government subsidies for viability.

✓ **正确** 1/1 得分

24. How does the automotive industry contribute to carbon neutrality beyond battery technology? *

- ○ By developing biofuel systems to replace electrification
- ○ By increasing the production of combustion vehicles to enhance fuel efficiency

- ○ By avoiding investments in electric charging infrastructure
- ◉ By using recycled materials, optimizing aerodynamics, and reducing production chain footprints

✓ **正确** 1/1 得分

25. How are product lifecycles evolving in the context of industrial transitions? *

- ○ Products are designed with regular software updates to extend usability while remaining competitive
- ○ Vehicles are designed to minimize initial costs at the expense of long-term features
- ○ Vehicles are mass-produced without considering future technological advancements.
- ◉ Design cycles include incremental validations to incorporate real-time user feedback and connected data insights