CBCS SCHEME

BAE358C

USN | | | | | | | | | |

Question Paper Version : D

Third Semester B.E./B.Tech Degree Examination, Dec.2024/Jan.2025
Digitalization in Aeronautics

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. How does the digital implementation in the FBW System reduce weight?
   a) Light weight materials b) Fewer components
   c) System integration d) Automated control

2. Which of the following is not a result of digital implementation?
   a) Hardware economy b) Flexibility in updating
   c) More power d) Built in test capabilities

3. Which of the following is not an advantage of using a digital data bus?
   a) Self test b) Multiplexing
   c) Less weight
   d) Not affected by electromagnetic interference

4. Where was the first fly by light system used?
   a) Fighter aircraft b) Bomber aircraft c) Airships d) Space crafts

5. MIL – STD 105E was First used in ____
   a) 1949 b) 1937 c) 1945 d) 1950

6. Which of the following affects Fly – by wire system?
   a) EMI b) Lightning strikes
   c) Flying in powerful radar region d) Bad weather

7. The type of Ethernet data bus adopted for airborne application is ____
   a) Simplex Ethernet b) Duplex Ethernet
   c) Multiplexed Ethernet d) Full Duplex Switched Ethernet

8. What is the fastest mode of data communication between components in aircraft?
   a) Coaxial cable
   b) Twisted pair cable
   c) Fiber optic cable
   d) Radio communication

9. In an aircraft, serial data transfer is achieved by
   a) Time division multiplexing
   b) Code division multiplexing
   c) Frequency division multiplexing
   d) Pulse modulation

10. What type of cable does MIL STD 1553 use?
   a) Coaxial cable
   b) Single twisted pair cable with shielding
   c) Single twisted pair cable without shielding
   d) Fiber optic cable.

11. What sector in Aeronautics industry are most advanced in adopting digital technologies?
   a) R & D and engineering
   b) Procurement and supply chain
   c) After market services
   d) Manufacturing

12. Airbus has been a leader in developing digital strategies.
   a) 2019 b) 2013 c) 2011 d) 2016

13. Boeing in 2021 announced its won digital transformation , based on success of what program?
   a) Commercial b) Defense c) Space d) None of these

14. Which of the following is a virtual representation of a real – world product or asset?
   a) Poka - Yoke b) Andon c) Digital Twin d) 5S

15. What are the advantage in Industry 4.0?
   a) Improved productivity and efficiency
   b) Low cost of Implementation
   c) Creating more vacancies for workers
   d) No risk hacking into the internal network

16. When did Industry 4.0 started?
   a) 2007 b) 2010 c) 2013 d) 2016

17. What are the essential components of a Smart factory?
   a) Smart Machines b) People at work c) Trained personnel d) All of these

18. What are the objective of Industry 4.0?
   a) Enabled self controlling
   b) Increase efficiency
   c) Reduce complexity
   d) All of these

19. The vision of Industry 4.0 is
   a) To decrease the cost of industrial production
   b) More efficient use of natural resources
   c) Enabling a custom mass production without increasing production cost
   d) All of these

20. How does Rolly – Royce improve reliability in aircraft engine?
   a) Predictive maintenance
   b) Prescriptive analytics
   c) Deployment of valuable devices
   d) All of these

21. What is meant by FEM?
a) Finite Element Module
b) Finite Element Method
c) Finite Element Model
d) First Element method

22. IRS method used for _____
a) Inertia term b) Stiffness term c) Both (a) & (b) d) None of these

23. What is IRS method?
a) Increased Radial System
b) Improved Reduce System
c) Improved Radial System
d) None of these

24. What is the limitation of IRS method?
a) Too slow
b) Accuracy of the result
c) Too fast
d) None of these

25. What is CFD?
a) Computer Fluid Dynamics
b) Complex Fluid Dynamics
c) Computational Fluid Dynamics
d) None of these

26. FEM methods are used in _____
a) Aerodynamic analysis
b) Structured analysis
c) Heat transfer analysis
d) None of these

27. What was added to monocogue structure to support larger, more powerful aircraft?
a) Frames b) Formers c) Skin d) Longerons

28. The moment area method is not suitable for which type of beams?
a) Cantilever beam
b) Continuous beam
c) Simply supported beam
d) None of these

29. Which type of frame has 3 joints and 4 members?
a) Deficient b) Perfect c) Redundant d) Efficient

30. What is the abbreviation of SMI?
a) Structural Model Interface
b) Structural Modelling Interface
c) Simple modeling Interface
d) None of these

31. What is the initial phase of an Aircraft Design?
a) Conceptual Design
b) Preliminary Design
c) Detail Design
d) Sizing

32. What are the phases of Aircraft Design process?
a) Conceptual Design only
b) Conceptual, Detail , Preliminary Design
c) Preliminary phase only
d) Detail Design phase only

33. The whole design philosophy of an aircraft is termed as ____
a) Design wheel b) Anatomy c) Design evaluation d) Sizing

34. What is mean by the term Lofting?
a) Specifications and Requirements
b) Conceptual drawing
c) Mathematical modeling of the skin
d) Trade study specifications

35. The main objective of the preliminary stage is ____
a) Manufacture
b) Fabrication
c) First order sizing
d) Lofting

36. What causes the most aircraft accidents?
a) Technical Fuels
b) Communication failure
c) Miscommunication between ATC and pilot
d) None of these

37. Casual maintenance of aircraft is called _____ maintenance.
a) Preventive
b) Unscheduled
c) Routine
d) Periodic

38. What is FMS?
a) Flying Management System
b) Flight Management System
c) Flight Maintenance System
d) None of these

39. What is CPS approach?
a) Centre – Physical System
b) Cyber – Physical System
c) Centre Portable System
d) None of these

40. What is meant by TRL?
a) Technology Readiness Level
b) Technical Readiness Level
c) Teaching Readiness Level
d) None of these

41. What is the abbreviation of ICAO?
a) International Civil Aviation Organization
b) International Commercial Aviation Organization
c) Indian Civil Aviation Organization
d) Indian Commercial Aviation Organization.

42. Which of the following is the most extensive maintenance check to be performed on an aircraft?
a) A - check
b) D - check
c) B - check
d) C - check

43. The continuous inspection program for commercial aircraft in India is approved by which of the following authorities.
a) DGCA
b) EASA
c) FAA
d) DCGA

44. How much time is required for line maintenance?
a) 45 minutes
b) 450 minutes
c) 45 hours
d) 450 hours

45. Preflight inspection is conducted by ____
a) Co - pilot
b) Pilot
c) Purser
d) Ground staff

46. How conceptual design begins?
a) With new concept
b) With fabrication
c) With Lofting
d) With CFD Tests

47. The estimation of weight, fuel weight is done by ____ process.
a) Sizing b) drawing c) lofting d) drafting

48. Line maintenance is also known as ____
a) Heavy Maintenance b) Electrical Maintenance
c) General Maintenance d) Routine Maintenance

49. How much time is required for C – check?
a) 2 weeks b) 2 months c) 2 days d) 2 years

50. Which one of the following is not true with respect to the line maintenance?
a) Quick turnaround time b) Aircraft is refueled
c) Critical instruments are checked for defects
d) Performed at MRO sites

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