

**B.Tech/M.Tech(Integrated) DEGREE EXAMINATION, NOVEMBER 2023**

Third Semester

**21ASC207T - AIRCRAFT MATERIALS AND PRODUCTION TECHNIQUES***(For the candidates admitted during the academic year 2022-2023 onwards)***Note:**

- i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40<sup>th</sup> minute.
- ii. **Part - B** and **Part - C** should be answered in answer booklet.

**Time: 3 Hours****Max. Marks: 75****PART - A (20 × 1 = 20 Marks)**Answer **all** Questions

1.	Which is the suitable material for gearboxes and gearbox housings? (A) Titanium alloys (B) Magnesium alloys (C) Nickel Alloys (D) Aluminum alloys	1	1	1
2.	_____ maintains the shape of the aircraft wing. (A) Wing Skin (B) Wing Ribs (C) Wing Spar (D) Wing Stiffeners	1	1	1
3.	The main structural member of the wing is known as _____. (A) Skin (B) Spar (C) Ribs (D) Longerons	1	1	1
4.	Which one of the following is the best heat resistant and corrosion resistant material? (A) Ceramics (B) Magnesium Alloys (C) Fiber Reinforced Plastic (D) Aluminium Alloys Composites	1	1	1
5.	Normalising is used for (A) Alloy Steels (B) High Carbon Steels (C) Low Carbon Steels (D) Aluminium Alloys	1	1	2
6.	In heat treatment, Annealing is performed to _____. (A) Improve Hardness (B) Reduce Hardness (C) Reduce Toughness (D) Remove defects	1	1	2
7.	Which one does not belong to stages of heat treatment? (A) Heating (B) Stirring (C) Soaking (D) Quenching	1	1	2
8.	HSLA steels are referred to as _____. (A) Maraging steels (B) Micro-alloyed steels (C) High-carbon steels (D) Medium-carbon steels	1	1	2
9.	The lower molding flask is known as (A) Drag (B) Cope (C) Shank (D) Cheek	1	1	3
10.	_____ supports the cores inside the mold cavity. (A) Runner (B) Pattern (C) Riser (D) Chaplets	1	1	3
11.	A channel through which the molten metal enters the mold cavity is _____. (A) Choke (B) Riser (C) Gate (D) Runner	1	1	3

12.	The physical model of the casting used to make the mold is _____ (A) Choke (B) Core (C) Gate (D) Pattern	1	1	3
13.	The initial raw metal for metal working process is known as _____ (A) Ingot (B) Outgot (C) Bloom (D) Billet	1	1	4
14.	The process of making a metal harder and stronger through plastic deformation is known as _____ (A) Elasticity (B) Strain hardening (C) Annealing (D) Tempering	1	1	4
15.	In which of the following forging process no flash is formed? (A) Open die (B) Closed Die (C) Impression Die (D) Hold dies	1	1	4
16.	Which of the following is a rolling defect? (A) Splattoring (B) Springback (C) Alligatoring (D) Coldshut	1	1	4
17.	Which of the following is not a lathe operation? (A) Turning (B) Chamfering (C) Knurling (D) Honing	1	1	5
18.	Which of the following is a type of conventional machining? (A) Electron beam (B) Abrasive jet (C) Milling (D) Laser Beam	1	1	5
19.	The surface of the tool in which the chip slides is known as _____ (A) Shank (B) Face (C) Flank (D) Nose	1	1	5
20.	The operation of beveling the extreme corner of the cylindrical work piece is known as _____ (A) Knurling (B) Turning (C) Chamfering (D) Drilling	1	1	5

**PART - B (5 × 8 = 40 Marks)**

Answer all Questions

**Marks BL CO**

21.	(a) Explain the properties and uses of Magnesium and Steel for Aircraft Structures. (OR) (b) Explain the requirements and factors for the selection of Aerospace Materials.	8	1	1
22.	(a) Explain the heat treatment process of aluminium alloy in detail. (OR) (b) Explain the stages of heat treatment in detail.	8	1	2
23.	(a) Explain gating system in detail with neat sketch. (OR) (b) Explain centrifugal casting in detail with neat sketch.	8	1	3
24.	(a) Explain rolling mills in detail with neat sketch. (OR) (b) Explain the types of dies used in sheet metal processing with neat sketch.	8	1	4
25.	(a) Explain quick return mechanism in detail with neat sketch. (OR) (b) Explain the types of milling in detail with neat sketch.	8	1	5

**PART - C ( $1 \times 15 = 15$  Marks)**

Answer **any 1** Questions

**Marks BL CO**

- |  |    |   |   |
|--|----|---|---|
| 26. Explain the materials used in Space Shuttle Structures in detail with neat sketch.                 | 15 | 1 | 1 |
| 27. Explain Electron Beam Welding in detail with neat sketch and state its advantages and limitations. | 15 | 1 | 3 |

\* \* \* \* \*

