Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech (minor) Degree Examination December 2020

Course Code: MET285

Course Name: MATERIAL SCIENCE AND TECHNOLOGY (MINOR)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks Marks

1	Which are the deficiencies of Bohr's atomic model?	(3)
2	Explain why covalently bonded materials are generally less dense than ionically bonded ones.	(3)
3	What are Miller Indices?	(3)
4	Define Dislocation density.	(3)
5	What are super alloys?	(3)
6	Draw and Explain S N Curve.	(3)
7	Which are the properties of fiber in fiber matrix composites?	(3)
8	What is dielectric? How is it different from an insulator?	(3)
9	What is Meissner effect?	(3)
10	What is Extrinsic Semiconductor?	(3)

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

11a	Classify Engineering materials.	(6)
11b	Obtain the atomic packing factor of bcc and fcc crystal systems	(8)
12	Explain about different types of bonds	(14)

Module 2

13	Explain about Edge dislocation and Screw dislocation and compare each	(14)
14a	Explain about the mechanism of homogeneous and heterogeneous nuclei formation	(8)
14b	State and explain Fick's first law of diffusion	(6)

Module 3

15a	What are solid solutions. Explain about the types of Solid Solutions	(9)

15b	Brief about Hume Rothery's rule.	(5)
16a	Explain about Ductile to Brittle Transition Temperature	(5)
16b	Explain about creep. Draw a creep curve and explain the salient points	(9)

Module 4

17	Explain in detail about metal matrix composites.	(14)
18	Explain in detail about polymer matrix composites	(14)

Module 5

19	Explain in detail about Semiconducting devices	(14)
20	Explain about the methods of fabrication of integrated circuits	(14)

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