

GUJARAT TECHNOLOGICAL UNIVERSITY**ME - SEMESTER– I (New course)• REMEDIAL EXAMINATION – SUMMER 2015****Subject Code: 2712806****Date:14/05/2015****Subject Name: Advanced Material Technology****Time: 10:30 am to 1:00 pm****Total Marks: 70****Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

- Q.1** (a) Describe the effect of temperature, strain and strain rate on plastic behavior of materials **07**
 (b) Explain Griffith theory of fracture of materials. **07**
- Q.2** (a) Describe the initiation and propagation mechanism of crack in the material. State Paris law. **07**
 (b) Explain factors affecting selection of materials for engineering purposes **07**
- OR**
- (b) Explain criterion for selecting materials in aerospace, automobile and nuclear industries. **07**
- Q.3** (a) What is work hardening? Explain various work hardening mechanisms. **07**
 (b) Write the properties, composition and applications of high strength low alloy steel. **07**
- OR**
- Q.3** (a) Explain properties and applications of dual phase steel. **07**
 (b) Write note on bio materials. **07**
- Q.4** (a) Explain in brief about the classification of ceramics with applications. **07**
 (b) Explain characteristics of polymers. Classify polymers in details. **07**
- OR**
- Q.4** (a) Explain the properties and applications of any three plastics. **07**
 (b) Describe the characteristics and applications of alumina and silicon carbide. **07**
- Q.5** (a) Classify composite materials. Explain its various applications in engineering field. **07**
 (b) Explain testing procedure to determine any one mechanical property of composite materials **07**
- OR**
- Q.5** (a) Define composite materials. Write its advantage over conventional material in details. **07**
 (b) Briefly explain particle reinforced composites and fiber reinforced composites with their characteristics. **07**
