



LANDMARK UNIVERSITY, OMU-ARAN

COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

B. ENG. (HONS) MECHANICAL ENGINEERING

2021/2022 ALPHA SEMESTER EXAMINATIONS

COURSE CODE: GEC 213

COURSE TITLE: MATERIAL SCIENCE AND RAW
MATERIAL STUDIES

COURSE UNIT: 2

TIME: 2 HOURS

INSTRUCTION(S): ANSWER QUESTION ONE AND ANY OTHER TWO(2) QUESTIONS

• Question One

- (a) What are Engineering Raw Materials? (3.3 marks)
- (b) Describe briefly the following kinds of engineering raw materials; (6 marks)
 - (i) Iron ore materials (ii) Clay materials (iii) Glaze materials
- (c) (i) Mention four (4) areas of application of iron ore materials. (4 marks)
 - (ii) Describe four (4) physical characteristics of Clay materials. (4 marks)
 - (iii) Highlight six (6) sources of Clay. (6 marks)

Question Two

- (a) Write short note on the importance of engineering materials to human civilization. (10 marks)
- (b) (i) What are ceramics? (2 marks)
 - (ii) Mention five (5) classifications of ceramics based on their compositions. (5 marks)
- (c) (i) Give three (3) basic components of traditional ceramics. (3 marks)
 - (ii) Briefly discuss the fabrication and processing of ceramics. (3.3 marks)

• Question Three

- a. (i) What is Material Science? (2.3 marks)
 - (ii) Explain briefly four (4) classes of engineering materials. (8 marks)
 - (iii) Give two (2) examples each of the classes of engineering materials. (8 marks)
- b. (i) What are High Carbon Steels? (2 marks)
 - (ii) Give three (3) areas of applications of High Carbon Steels. (3 marks)

• Question Four

- (a)(i) Write a short note on the production of glass from agro-wastes. (6.3 marks)
 - (ii) Mention two (2) mineral compositions each found in Rice husk, Peanut shell, Corn stalk, Egg shells respectively. (8 marks)
 - (iii) Give six (6) examples of Glaze materials. (3 marks)
- (b)(i) Mention four (4) common oxides found in Glazes. (4 marks)
 - (ii) What are Ball clay materials? (2 marks)

Question Five

- (a) (i) What do you understand by RMRDC? (2.3 marks)
(ii) What are the sole objectives of RMRDC? (3 marks)
(iii) Mention three (3) locations each where kaolin and feldspar deposits are found in Nigeria. (6 marks)
- (b)(i) What are Polymer materials? (2 marks)
(ii) Write short note on the applications and processing of Polymer materials. (7 marks)
(iii) Mention three (3) classifications of Polymers. (3 marks)