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Diploma in Construction Technology		
NVQ Level 05 – Semester I		
Construction Materials	F45C001M05	Three Hours
Answer any 05 questions only		

1. Concrete is a construction material composed of cement, fine aggregates and coarse aggregates mixed with water. It gains the strength when hardening over the time.
 - i) Explain the importance of curing of concrete. What is Grade 20 concrete?

(04 marks)
 - ii) State the factors that should draw more attention when selecting timber for formwork.

(04 marks)
 - iii) Describe “Structural Properties” of concrete and briefly mention the factors that can influence on these properties.

(06 marks)
 - iv) Formwork in construction is closely associated with placing concrete. What are the considerable factors when erecting formwork for a long-spanned slab?

(06 marks)
2.
 - i) Ready mixed concrete is widely used in many construction sites. Discuss advantages and disadvantages of using ready mixed concrete.

(04 marks)
 - ii) A three-storied commercial building is under construction in a city. The foundation and the DPC have been constructed and the superstructure is planned. The owner is now considering two options to complete the building;
 - 1) Within four (04) months and gain more income within the year;
 - 2) Within twelve (12) months as the initial capital is less;

Consider the above options and suggest materials for each option, that can be used for the following components of the building;

 - a) External walls and partition walls.

(05 marks)
 - b) Doors and windows.

(04 marks)
 - c) Slabs, beams and stair cases;

(05 marks)
 - d) Flooring

(02 marks)



3. i) What are the vital factors in facilitating material storage at a site? Explain how would you make arrangements to store the following materials; (04 x 3 = 12 marks)
- | | |
|-----------|----------------------|
| a) Timber | c) Cement |
| b) Paints | d) Wall/ floor tiles |
- ii) Sand is acting as filler in concreting, plastering, brick work and many other work items.
- a) Differentiate the quality of sand required in concreting and internal plastering. (03 marks)
- b) What are the common properties of sand? Suggest a substitute for sand. (05 marks)
4. i) Rock blasting and extraction of various types of stones from natural rock is an industry that has very much close association with the construction industry. The process ranges from producing materials such as quarry dust to luxury products. Some are used in raw state and some are transformed to a different state through chemical or other processes.
- a) Name two (02) types of such materials and write down two (02) examples for each of them; (06 marks)
- b) Write down the places of using each type. (03 marks)
- ii) Explain the purpose of using “Sealant” in construction. What are the main properties of sealants? Name two (02) sealant materials and the places of their respective application. (08 marks)
- iii) Name three (03) types of defects occurred in a newly painted metallic surface. (03 marks)
5. i) Chemically mixing of two or more metals produces different form of materials having improved properties than the original raw metals. They are called metal alloys and steel and aluminum are very much popular in today’s construction.
- a) State six (06) properties of metal alloys. (08 marks)
- b) Give examples for the usage of four (04) types metal alloys with the places of their application. (04 marks)
- ii) Select four (04) building materials and discuss their wastages at the construction. What are your suggestions to mitigate the wastage of them and reduce the cost? (08 marks)
6. Write short notes on the following; Draw sketches and give examples where necessary:
- i) Purpose of soil testing
 - ii) Scaffolding
 - iii) Timber seasoning methods
 - iv) Use of Plastics in construction
 - v) Use of bituminous materials
- (04 x 5 = 20 marks)