



FACULTY OF ENGINEERING
END OF SEMESTER EXAMINATIONS - APRIL 2025

PROGRAMME: DIPLOMA IN CIVIL ENGINEERING

YEAR/SEM: YEAR 2/SEMESTER 2

COURSE CODE: DCE2206

NAME: LABOUR -BASED ROAD CONSTRUCTION

DATE: 2025-04-16

TIME: 9:00AM-12:00PM

INSTRUCTIONS TO CANDIDATES:

1. Read the instructions very carefully
2. The time allowed for this examination is STRICTLY three hours
3. Read each question carefully before you attempt and allocate your time equally between all the Sections
4. Write clearly and legibly. Illegible handwriting cannot be marked
5. Number the questions you have attempted
6. Use of appropriate workplace examples to illustrate your answers will earn you bonus marks
7. Any examination malpractice detected will lead to automatic disqualification.

DO NOT WRITE ANYTHING ON THE QUESTION PAPER

Section A Attempt two questions

Question 1:

- (a) Explain the two basic functions of roads (04 Marks)
- (b) In relation to labour based road construction, describe the following terms
 - (i) Camber (02 Marks)
 - (ii) Alignment (02 Marks)
 - (iii) Center line (02 Marks)
- (c) Draw a neat well labelled sketch of a road cross section and show the following; (06 Marks)
 - (i) Side drains
 - (ii) Embankment
 - (iii) Shoulder
 - (iv) Camber
- (d) Explain the term appropriate technology and give two reasons supporting its application in road construction (04 Marks)

Question 2:

You have been tasked with a labour based road project 2km long but 0.5km section crosses a swampy terrain.

- a) Explain three major excavation forms you would adopt on the swampy section (04 Marks)
- b) State ten resources that you would employ to carry out the activity (04 Marks)
- c) Explain three most effective treatments best suited for this road to ensure that its design life is achieved. (04 Marks)

Question 3:

Road maintenance requires a range of organizational and technical skills as the works on the road in use by traffic are quite hazardous to both the workmen and road users.

- a) Describe how the following signs and safety equipment are likely to be used to prevent fatal occurrences
 - i. Clothing (02 Marks)
 - ii. Flags (02 Marks)
 - iii. Temporary sign posting (02 Marks)
 - iv. Vehicles (02 Marks)
- b) Develop work procedure how you would correct a corrugated earth road in your area by labour-based techniques if the road is in use by traffic (12 Marks)

Question 4:

As a site engineer, develop procedures to carry out gravel excavation and stock piling under the following headings and in each case taking care of safety

precautions.

- | | |
|--------------------------------------|------------|
| (a) Preparation of quarry and access | (07 Marks) |
| (b) Work method | (08 Marks) |
| (c) Resources | (03 Marks) |
| (d) Quality control | (02 Marks) |

Section B Attempt three questions

Question 1:

- (a) Draw a well labelled cross section through a labor based road and describe any four drainage structures that can be used on it stating their respective significance (10 Marks)
- (b) The runoff from a labor based road surface and shoulders ultimately flows on the cut slopes causing erosion of these parts, explain three main harmful effects caused by erosion of the cut slopes (03 Marks)
- (c) After excavation of mitre drains on a road construction site, what are the items a supervising officer includes in his checklist before inspection of the drain? (07 Marks)

Question 2:

Before labour based road construction works commence, a site camp needs to be set up to accommodate the workers, materials, tools and equipment. The site camp needs careful planning to provide site staff with basic comfort, adequate storage and security for equipment and materials.

- a) As an immediate supervisor on site, state five main items you would consider in selecting a suitable camp location (04 Marks)
- b) As regards to material storage, explain how the following should be handled;
- (i) Culverts (04 Marks)
- (ii) Pegs (04 Marks)
- (iii) Fuel, oil and lubricants (04 Marks)
- (iv) Strings (04 Marks)

Question 3:

The costing of equipment usage rates is necessary for estimating the cost of works and for maintenance or proper accounts of machinery in use under labour based road projects.

- (a) State six factors that govern the costing (06 Marks)
- (b) Discuss the advantages and disadvantages of using labor based approach over machinery on road construction (08 Marks)
- (c) Differentiate between the following;
- (i) Gravel roads and earth roads (03 Marks)
- (ii) Upgrading and rehabilitation (03 Marks)

Question 4:

- (a) Capacity within the community is built through their participation to implement and sustain a project. The sense of ownership is developed usually leading to a greater impact of program interventions. With reference to labor based road construction.
- (i) State five benefits accruing from community involvement (05 Marks)
- (ii) Suggest five main possible hindrances to community participation (05 Marks)
- (b) Explain the following as associated to road work health and safety
- (i) HIV (03 Marks)
- (ii) AIDS (04 Marks)
- (c) Outline three major mainstreaming causes of HIV/AIDS on a road construction project (03 Marks)