

## **BUILDING CONSTRUCTION**

### **STRUCTURE AND SCHEME OF THE EXAMINATION**

The Examination shall consist of three (3) papers, all of which must be taken.

Paper 1 shall consist of forty (40) multiple choice questions for 40 marks and shall last for 45 minutes.

Paper 2 shall be an essay paper consisting of 5 short structured questions, 4 of which should be answered in 1 hour for 60 marks.

Paper 1 and 2 shall be a composite paper of 1¾ hours duration for 100 marks.

Paper 3: 2½ hours duration for 100 marks

Paper 3 shall be a paper in Building Drawing and shall consist of 4 questions. Candidates shall be required to respond to 1 compulsory question and any 2 other questions.

The compulsory question shall carry 40 marks. The 3 other questions shall carry 30 marks each.

### **DETAILED SYLLABUS**

<b>S/NO.</b>	<b>CONTENT</b>	<b>NOTES</b>
1	Introduction to Building	(i) Definition of building (ii) Classification and types (iii) Introduction to National Building Codes. (Building regulations and Byelaw requirements)
2	Building Construction and Construction Team	(i) Definition, purpose and procedures for building construction (ii) Parties in the construction team. (Client's team, contractor's team and statutory personnel. (iii) Function of the team members. (iv) Relationship of the parties.
3	Safety Practices.	(i) Definition of safety, rules and regulation. (ii) Hazards in the workshop and construction site. (iii) Causes and method of accident prevention. (iv) Safety equipment and measures at construction site. (v) First aid equipment, procedures and safety wears. (vi) Safety in working with dangerous equipment

		and materials (electricity, scaffolding, formwork, cement, roof, etc).
4	Basic tools, equipment and machines	(i) Identification and functions of basic. (ii) Tools and equipment. (iii) Care of tools and equipment.
5	Site clearing and levelling	(i) Operations involved in site clearing. (ii) Tools and equipment for site clearing and levelling. (iii) Basic site levelling operations.
6	Site organization and layout	(i) Preliminary operations in building construction. (ii) Procedure for site layout. (iii) Location, boundary lines, hoarding, hutments and access road.
7	Setting out	(i) Methods of setting-out. (3:4:5 method, Builders' square method). (ii) Tools and equipment for setting out.
<b>S/NO.</b>	<b>CONTENT</b>	<b>NOTES</b>
		(iii) Procedures for setting out.
8	Building Drawing	(i) Use of drawing tools and simple exercise on plane geometry in relation to building. (ii) Building drawing symbols (iii) Scales used in building and their application on site. (iv) Production drawings and interpretations (Plans, Elevations, sections and details). (v) Special details (Detailing building elements including doors and windows schedule). (vi) Scaling (Enlargement, pictorial and perspectives. (vii) Definitions and use of Auto-CADD.
9	Excavation and earth-work.	(i) Classifications, types and properties of soil. (ii) Definition and function of excavation. (iii) Methods of excavations. (iv) Tools, equipment and plant used for excavation. (v) Solution to excavation problems (Earthwork support, timbering battering and dewatering). (vi) Safety rules during excavations.

10	Foundation	<ul style="list-style-type: none"> <li>(i) Definition, purpose and functional requirement of foundation.</li> <li>(ii) Types of foundation.</li> <li>(iii) Factors that determine choice of foundation.</li> </ul>
11	Ground Floors	<ul style="list-style-type: none"> <li>(i) Types, functions and functional requirement of ground floor.</li> <li>(ii) Methods of construction ground floor.</li> <li>(iii) Definition of basement.</li> <li>(iv) Explain differences between building with basement and without basement.</li> <li>(v) Problems relating basement in a building.</li> </ul>
12	Suspended floors	<ul style="list-style-type: none"> <li>(i) Definition and functions of upper floor</li> <li>(ii) Methods of construction concrete floors and timber upper floors.</li> </ul>
<b>S/NO.</b>	<b>CONTENT</b>	<b>NOTES</b>
13	Concrete	<ul style="list-style-type: none"> <li>(i) Definition and types of concrete.</li> <li>(ii) Materials for concrete.</li> <li>(iii) Definitions types, components and manufacture of cement. Properties and uses of cement including other alternatives to cement product e.g. Pozzolana, Pulverize fuel Ash (P.F.A.), Rice husk ash (R.H.A), etc</li> <li>(iv) Types and uses of aggregates (other aggregates such as palm kernel shell) and periwinkle, etc.</li> <li>(v) Types and uses of reinforcements.</li> <li>(vi) Properties and characteristic of concrete</li> <li>(vii) Process of concrete production.</li> <li>(viii) Types of concrete tests.</li> </ul>
14	Walls	<ul style="list-style-type: none"> <li>(i) Definition, types and functions of walls</li> <li>(ii) Definition, types and properties of walling materials. (including locally sourced materials).</li> <li>(iii) Manufacturing processes of walling materials (clay, brick, blocks and concrete blocks).</li> <li>(iv) Sizes of blocks and bricks.</li> </ul>

		<ul style="list-style-type: none"> <li>(v) Mortar mixes for brick.</li> <li>(vi) Methods of wall construction</li> <li>(vii) Timber wall construction.</li> <li>(viii) Definition and function of wall openings.</li> <li>(ix) Methods of constructing wall opening.</li> <li>(x) Functions of lintels and arches.</li> </ul>
15	Doors and windows	<ul style="list-style-type: none"> <li>(i) Definition, functions and types of doors and windows.</li> <li>(ii) Methods of mixing doors and window frames.</li> </ul>
16	Staircases	<ul style="list-style-type: none"> <li>(i) Definition, classification, types and uses of stairs.</li> <li>(ii) Materials used for construction of stairs.</li> <li>(iii) Materials used for finishing staircases.</li> </ul>
<b>S/NO.</b>	<b>CONTENT</b>	<b>NOTES</b>
17	Plumbing installations and drainage system.	<ul style="list-style-type: none"> <li>(i) Types of fitting in plumbing and sanitary works.</li> <li>(ii) Materials for plumbing works and fittings.</li> <li>(iii) Types of sanitary appliances.</li> <li>(iv) Soil and waste appliances.</li> <li>(v) Installation of sanitary appliances.</li> <li>(vi) Terms used in drainage works.</li> <li>(vii) Principles and functional requirement of drainage system.</li> <li>(viii) Types of drainage system.</li> <li>(ix) Types of drainage materials (pipes and fittings).</li> <li>(x) Methods of laying and testing drain lines.</li> <li>(xi) Description of septic and soakaway (inspection chamber, manhole, etc).</li> </ul>
18	Electrical installation and solar energy system.	<ul style="list-style-type: none"> <li>(i) Electrical symbols, installation terms and materials.</li> <li>(ii) Identification and uses of electrical wiring materials.</li> <li>(iii) Types of electrical wiring.</li> <li>(iv) Definition, functions and components of solar energy systems.</li> </ul>
19	Roofs	<ul style="list-style-type: none"> <li>(i) Definition, purpose and types of roof.</li> <li>(ii) Functional requirements of roof.</li> </ul>

		<ul style="list-style-type: none"> <li>(iii) Materials used for roofs.</li> <li>(iv) Roof covering materials.</li> <li>(v) Protection of roof from wind, rain, lightening, etc.</li> </ul>
20	Finishes	<ul style="list-style-type: none"> <li>(A) <u>Floors:</u> <ul style="list-style-type: none"> <li>(i) Types and characteristics of floor finishes.</li> <li>(ii) Methods of laying floor finishes.</li> <li>(iii) Uses of floor finishes.</li> <li>(iv) Care and maintenance of floor finishes.</li> </ul> </li> <li>(B) <u>Walls</u> <ul style="list-style-type: none"> <li>(i) Types and characteristics of wall finishes</li> </ul> </li> </ul>
<b>S/NO.</b>	<b>CONTENT</b>	<b>NOTES</b>
		<ul style="list-style-type: none"> <li>(ii) Plastering and rendering</li> <li>(iii) Types of rendering</li> <li>(iv) Methods of applying plastering and rendering mix.</li> <li>(C) <u>Ceiling:</u> <ul style="list-style-type: none"> <li>(i) Types and function of ceiling finishes.</li> <li>(ii) Ceiling finishing materials.</li> </ul> </li> </ul>
21	External Work.	<ul style="list-style-type: none"> <li>(i) Types of fence, materials for fencing and construction of fence.</li> <li>(ii) Types of gate, fixing of gates and production of gate.</li> <li>(iii) Types and materials for construction of access roads.</li> <li>(iv) Construction of access road.</li> <li>(v) Needs and materials for landscaping.</li> <li>(vi) Procedures for landscaping.</li> </ul>
22	Types of Business Organization and Ways of Raising Capital.	<ul style="list-style-type: none"> <li>(i) Principles and Management of Business Organization in the building industry.</li> <li>(ii) Types of Business Organization in the Building Industry.</li> <li>(iii) Types and sources of Capital.</li> </ul>
23.	Book Keeping	<p>Book Keeping:</p> <ul style="list-style-type: none"> <li>(i) Book Keeping in small scale businesses.</li> <li>(ii) Books of original entries.</li> </ul>

24	Contract Work	Contract Work:  (i) Definition and types of contract. (ii) Contract documents. (iii) Parties to a contract.
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### **SUGGESTED READING LIST**

<b>S/NO.</b>	<b>AUTHOR</b>	<b>TITLE OF BOOKS</b>	<b>PUBLISHER</b>
1	Stephen Emmitt and Christopher A. Gorse.	Barry's Introduction to Construction in Buildings	Blackwell Publishing
2	M. O. Obande	Blocklaying and Concreting	Longman Publishing Company
3	R. Barry	The Construction of Buildings Vols I– V	Granada
4	Ivor H. Seeley	Building Technology	Palgrave
5	S. C. O. A. Ezeji	Building Construction	
6	Nash	Brickwork Vols 1 – 3	
7	R. Chudley	Building Construction Handbook	Billing & Sons Ltd.
8	W. B. Mckay	Building Construction Vols 1 – 4	
9	Roger Greeno	Principles of Construction	
10	Adesokan and M. O. Adeniyi	Building Construction for Senior Secondary Schools Vols 1 – 3 (Ilesanmi)	
11	R. Chuelley	Construction Technology Vols 1 – 4	Longman
12	C. M. H. Barritt	Advanced Building Construction Vols 1 & 2	Longman