

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architecture**

Subject: **Building Construction-I(AA102)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- a) Define super-structure of building.
- b) Define shallow foundation.
- c) Why it is important to avoid continuous vertical joints in brick masonry? Give reason.
- d) Define battened door, ledged door and braced door.
- e) Define king truss.
- f) Write short note on functional role of roofs.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- a) Draw neat sketch of any six tools used in contribution and mention the specific worker.
- b) Differentiate between foundation and plinth. Give three points each.
- c) Explain with sketch, joints in stone masonry. (any 3)

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain with the help of sketch the procedure of setting out foundation trenches.
- b) Describe the types of combined footings with neat sketches.
- c) Explain different methods of improving the bearing capacity of soil.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- a) A balcony is to be built with a parapet wall on side in bricks. Which brick bond would you suggest? Draw the required details to scale, explaining its contribution with necessary labeling and dimensions.
- b) Define dressing of stone. Explain its principle.
- c) State the important points to be considered while supervising the brick masonry work.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- a) Describe the components of a window frame and shutter with neat sketch.
- b) Describe flush doors, contribution, operation and advantages.
- c) Explain combined window and ventilator with neat sketch.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain the differences between sliding doors and revolving doors with neat sketches.
- b) Draw neat sketches of the following types of roofs:
i) Couple roof ii) Collar beam roof iii) Lean-to-roof
- c) Define pitched roof and draw a neat sketch of pitched roof and label all its components.

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship/Architecture**

Subject: **Building Material-Construction (AA104)/(AR104)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- a) List any three construction materials used in building with recycled or reclaimed content.
- b) Mention any two disadvantages of using mud wall construction.
- c) Name any three substitutes for bricks that can be used for wall construction.
- d) Define 'mortar'.
- e) List any three market forms of steel.
- f) Name any three market forms of timber commonly used.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- a) Discuss any three criteria of choosing sustainable materials for construction.

(Only for students of Diploma Architectural Assistantship)

- b) Elaborate on the classification of stones as a building material.

(Only for students of Diploma in Architecture)

- b) Write short note on: i) Embodied energy of building materials
ii) Certified green building materials
- c) Discuss the basic process in the manufacture of bricks.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- a) Write short note on: i) Rammed earth construction ii) Field tests for bricks
- b) Discuss any three types of bricks based on its shape.
- c) Elaborate on the properties of good sand.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- a) Differentiate between fine aggregate and course aggregate used for an RCC framed building.
- b) Write short note on the following categories of lime:
i) Fat lime ii) Hydraulic lime
- c) Describe any two categories of mortar classified based on the kind of binding material used in it.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- a) Suggest any six precautions to be taken for the storage of cement.
- b) Elaborate on any six properties of cement concrete which makes it a popular construction material.
- c) Discuss the various types of defects commonly found in steel.

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architecture**

Subject: **Environmental Science For Architecture(AA106)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions: **5 x 3 = 15**

- a) Explain abiotic components of ecosystem.
- b) Explain in brief the direct value of forest.
- c) State the effects of ozone layer depletion.
- d) Define population diversity.
- e) State the advantages of solar energy.
- f) Define: i) Extinct species ii) Endemic species

Q.No.2. Answer any two of the following Questions: **2 x 6 = 12**

- a) State any six reasons for loss of biodiversity.
- b) Explain in brief three types of food chains.
- c) Draw an upright pyramid of numbers for grassland ecosystem and explain in brief.

Q.No.3. Answer any two of the following Questions: **2 x 6 = 12**

- a) What is the environmental impact of mining?
- b) Explain the causes and effects of water pollution.
- c) Discuss the causes of land degradation. How land degradation can be controlled?

Q.No.4. Answer any two of the following Questions: **2 x 6 = 12**

- a) State the various measures to be implemented to prevent water pollution.
- b) State the effects of nuclear pollution.
- c) Explain the various types of solid waste.

Q.No.5. Answer any two of the following Questions: **2 x 6 = 12**

- a) State the mitigation measure to be implemented to make cities livable with issues of waste generation and management.
- b) Write a detail note on urban planning and the problems of planned cities.
- c) Define urban ecology. State its importance.

Q.No.6. Answer any two of the following Questions: **2 x 6 = 12**

- a) Draw a neat sketch and explain water harvesting system.
- b) State the advantages and disadvantages of ocean ecosystem.
- c) Draw a neat sketch and explain the working of a wind energy generating system.

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architecture**

Subject: **Building Construction-II(AA202)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions: **5 x 3 = 15**

- a) Define ribbed structures and state their structural behavior.
- b) Define ground floor. Explain its function in a building.
- c) State any three functions of brick masonry.
- d) Distinguish between a lintel and an arch.
- e) List various types of windows classified based on their methods of operation or opening.
- f) Define the following terms: i)Template ii)Battens iii)Facia board

Q.No.2. Answer any two of the following Questions: **2 x 6 = 12**

- a) Explain the concept of flying buttress with a neat sketch.
- b) Explain the load transfer mechanism in framed structures with neat sketch.
- c) Explain in brief the following:
i)Timber lintel of built up section ii)Reinforced brick lintel

Q.No.3. Answer any two of the following Questions: **2 x 6 = 12**

- a) Explain the procedure of plinth construction, courses of plinth with a neat sketch.
- b) Describe timber flooring with advantages and limitations.
- c) Discuss how usage, durability and cost influence the choice of flooring.

Q.No.4. Answer any two of the following Questions: **2 x 6 = 12**

- a) Describe with the help of sketches, any two forms of brick stone composite masonry.
- b) State the advantages of hollow concrete block masonry over the stone masonry construction.
- c) With the help of sketches differentiate between clay block partitions and asbestos sheet partitions.

Q.No.5. Answer any two of the following Questions: **2 x 6 = 12**

- a) Explain the following with help of sketches:
i)Pointed arch ii)Venetian arch
- b) Differentiate with the help of sketches between the following:
i) Fixed window and casement window ii)Gable window and dormer window
- c) Draw a neat detailed sketch of a timber framed and paneled door with shutter of size 1.0mx2.10m and label the various parts.

Q.No.6. Answer any two of the following Questions: **2 x 6 = 12**

- a) Give advantages of steel truss over timber truss.(3 points each)
- b) Explain with neat labeled sketch construction of timber king port truss showing all elements and joinery details.
- c) Differentiate between couple closed roof and cellar beam roof with help of a neat labeled sketches.

17/4/2026 9.30 to 12.30

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA
April, 2026 Examinations

Programme: **Architectural Assistantship/Architecture**

Subject: **Building Material-Finishing(AR204)/ Building Material
-Finishes(AA204)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- List any three varieties of industrial timber.
- Give two reasons why floor tiles are a popular flooring material compared to natural stone flooring.
- List any three properties of gypsum plaster, which makes it suitable for use on building surfaces.
- State any three characteristics of plastics, because of which it is used for some of the building construction components.
- Define adhesives.
- List any three category groups through which glass can be classified.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- State any six advantages of plywood as compared to the use of natural timber.
- Elaborate on the step-by-step process through which ferro-cement structure can be constructed.(6 points)
- Differentiate between any one of the following:
i)Wired glass and bullet proof glass ii)Glass blocks and foam glass

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- Discuss the disadvantages of using natural stones as flooring material of an apartment.
- Differentiate between the process of fixing natural stones and floor tiles.
- Elaborate on the precautions to be considered while fixing wooden flooring.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

(Only for students of Diploma in Architecture)

- Explain with sketches any three types of paintings used in walls.

(Only for students of Diploma Architectural Assistantship)

- Explain the process of painting on a wall with newly plastered surface.
- Elaborate on any six characteristics of an ideal paint to be selected for the finishing of wall surfaces.
- Write short note on: i)Distemping ii)Cladding on wall surfaces

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- Discuss the advantages and disadvantages of any one type of roofing sheets: i)Asbestos cement sheets ii)Galvanised iron sheets
- Write short note on the advantages of the use of the following types of plastics in building: i)Fibre glass reinforced plastics ii)PVC doors and windows

(Only for students of Diploma in Architecture)

- c) Discuss the various market forms of aluminum available and its application in building component.

(Only for students of Diploma Architectural Assistantship)

- c) Discuss how can the availability of various market sizes of flooring material can affect the choice between tile flooring and natural stone flooring.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- a) Discuss the advantages of using PVC pipes for plumbing as compared to plumbing pipes of other materials.
b) Discuss the advantages of application of adhesives as compared to the conventional methods of joining through bolting, welding and riveting.
c) Write short note on: i) Properties of bitumen ii) Different sizes of PVC pipes for plumbing

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Detailing in Construction (AR302)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

a) Answer the following:

3 x 3 = 9

i) Name important components of triple joist floor.

ii) List any six types of extruded steel sections.

iii) State methods used for compaction procedure in concreting.

b) Answer the following:

3 x 2 = 6

i) Define the term 'shoring'.

ii) Define the term 'dampness'.

iii) Define the term 'waterproofing'.

Q.No.2. Answer the following Questions:

a) Answer any one:

(06)

i) A timber single flight stair is to be provided to climb a mezzanine floor at 220cm height above plinth. Draw neat labeled details necessary for construction of stairs.

ii) Draw neat labeled details of joinery between:

i) Wooden stringer and newel post

ii) Wooden stringer and trimmer joist of floor

b) Answer the following:

2 x 3 = 6

i) Sketch any three types of widening joints.

ii) Name various types of bars used as reinforcements in R.C.C.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

a) Draw neat sketches of any three types of trusses for spans more than 15m. Label important members in each truss.

b) Draw neat labeled sketch of a steel stanchion fabricated using two channel sections and batten plates. Also draw details of this composite stanchion fixed on R.C.C. foundation. Assume appropriate sizes of steel sections.

c) Draw labeled details of steel mezzanine floor provided over 2.5m x 6m shop. Also show details of fixing cement board panel over steel floor framework. Assume appropriate steel section dimensions.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

a) Explain any four properties of reinforced concrete that is a versatile material in construction industry.

b) Describe four important stages involved in concreting process on site.

c) State precautions necessary to be observed by a site supervisor to ensure safe concreting on site.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

a) Draw a neat reinforcement details in plan and section for a simply supported R.C.C. slab. Consider room space to be 4m x 3m.

b) An R.C.C. stair is to be provided between floors of height 3.04m. Draw neat cross section to explain reinforcement details for stairs.

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- c) Explain with neat diagram different locations of joints provided in R.C.C. structures. Draw details of expansion joint from roof top to foundation.

Q.No.6. Answer the following Questions:

- a) Answer any two:

2 x 4 = 8

- i) Draw neat details of formwork for any two precast components.
- ii) Draw labeled sketch to explain shuttering for a round R.C.C. column.
- iii) Draw details of formwork for an R.C.C. lintel over a window 1.5m wide.

- b) Answer any one:

(04)

- i) State various methods for waterproofing of overhead domestic R.C.C. water tank.
- ii) Describe procedure of laying brick bat coba as a waterproofing method on R.C.C. roof slab.

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BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **History of Architecture (AR304)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

5 x 3 = 15

- Define the term contemporary architecture. Give one example of the same.
- List out any three characteristics features and principles that reflect in Indus Valley civilization.
- Mention any three important characteristics features of Islamic architecture.
- Name all the important Greek orders.
- Write down any three important buildings of modern architecture along with the name of the architect who designed them.

Q.No.2. Answer the following Question:

- Q.No.1 is compulsory, answer any two from the remaining:
 - Define the term 'Gothic Architecture'. Give one example of the same. **(04)**
 1. Define the time line giving examples. **(04)**
2. Write short note on Indus Valley civilization. **(04)**
 1. Write the difference between Chaitya and Viharas. (4 points) **(04)**
2. Explain with the sketches development of Chaitya arches. **(04)**
 - Write short note on: 1. Konark temple 2. Orissa temple **(04)**

Q.No.3. Answer the following Question:

- Q.No.1 is compulsory, answer any two from the remaining:
 - Write short note on: 1. Gopuram 2. Dravidian order **(04)**
 - Mention four principles of house planning during Vedic period **(04)**
 - With the example, write a short note on central Indian temple style. **(04)**
 - List out the architectural characteristics features of Buland Darwaza. **(04)**

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- Write short note on: i) Jami Masjid at Ahmedabad ii) Taj Mahal
- Draw a neat sketch of Qutub Minar and write its important characteristics features.
- Explain the following terms: i) Tomb ii) Pyramids iii) Parthenon

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- Write a note on St. Peter's Basilica. With the help of sketches explain its important characteristic features.
- Explain with the help of sketches any three Roman orders.
- Write in detail about 'Roman Pantheon'. Sketch the elevation of the same.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- List out characteristic features of Mesopotamian architecture. Give one important example.

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- b) Write short note on : i) Tambdi Surla temple ii) Goan Hindu courtyard houses
- c) List out the important buildings designed by Ar. B.V. Doshi. Write the characteristic features of one of his buildings. (national or international level)

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Building Construction Systems (AR402)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

5 x 3 = 15

- List out three important requirements of a good partition wall.
- What is the preferred choice of material for a false ceiling frame and give one reason why?
- Explain 'pile cap'.
- Precast concrete speeds construction works, explain with example.
- Define 'space frame'.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- Compare traditional brick partition wall with a concrete block partition wall.(4 points)
- Draw sketches to explain glass blocks partition. Assume necessary data.
- Explain three characteristics of a portable partition with examples.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- Explain concrete pile and its types.
- Explain four hazards in the construction phase of piles.
- Write short note on: i)Sheet piles ii)Materials for temporary partition wall

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- Draw sketches of a curtain wall showing its detailing and method of construction.
- Draw sketches showing details of fixing ACP paneling and junctions composed of different material fixing.
- Explain features of a shop drawing of a precast concrete structure.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- Draw sketches showing details of a pre-fabricated structure and its components.
- List out three advantages and three disadvantages of a ferrocement structure.
- Explain the process involved in external wall finishing considering any one material.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- Explain Geodesic Dome and sketch it for a design proposal of a science centre.
- Sketch three examples of tensile structure using various materials.
- Suggest six considerations to be taken into account for floor finishes.

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Building Services-I (AR403)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- Define 'plumbing'.
- Define 'valves' used along pipelines.
- State any one local bylaw pertaining to water supply for houses in Goa.
- List any three components of a drainage system below the ground.
- Give reason why a gradient is needed to be considered for a rain water system.
- How is a one-way switch different from a two-way electrical switch?

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- Write short note on: i) Soil pipe ii) Flushing cistern
- Elaborate on any two types of plumbing systems used in residential areas.
- What is the function of the following?
i) Ventilating pipes ii) Sewer

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- Write short note on any two types of pipes commonly used in water supply system: i) Cast iron pipe ii) G.I pipe iii) PVC pipes.
Also specify any two methods of laying distribution pipes.
- Explain the function of the following and mark its location in a schematic plan: i) Bib cock ii) Stop cock
- Draw a neat labeled diagram (plan and section) of an underground water storage tank/sump. Assume necessary dimension and sizes.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- What is the purpose of the following in a sanitary system?
i) Interception trap ii) Grease trap
- Explain with a neat labeled diagram (plan and section) the septic tank for a residential house and suggest its position in a house layout.
- Explain the following: i) Size of septic tank based on occupancy ii) Principles of house drainage

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- Explain with sketches, any three types of water supply pipe joints.
- Explain with a sketch the purpose of a ferrule used in domestic water service connection.
- Prepare a rain water drainage of a house given in fig.1. for rain water harvesting. Assume 2-way roof slope for the house.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- Give reason why the following is provided?
i) Earthing ii) Transformer
- Discuss the safety parameters which can be considered for the electrical services for a house given in fig.1.
- Prepare an electrical layout for the house given in fig.1. with appropriate legend and electrical symbols.

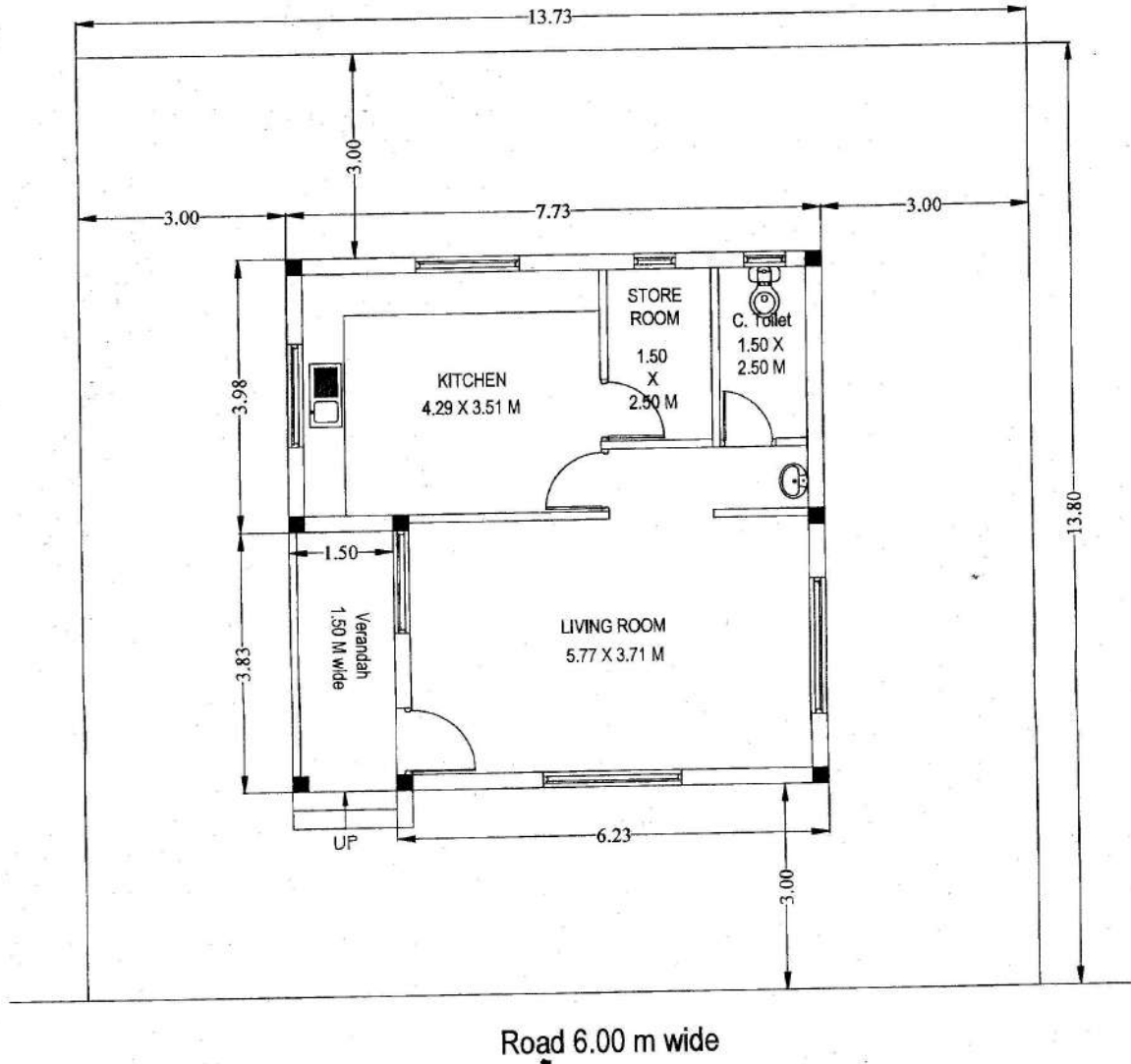


Fig. 1: GROUND FLOOR PLAN OF HOUSE

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BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Fundamentals of Structures (AR404)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- Define the following: i) Dead load ii) Imposed load
- Write the characteristics of couple.
- Differentiate between centre of gravity of centroid.
- What is water cement ratio in concrete?
- Explain briefly framed structure.
- State the difference between structural cracks and non-structural cracks.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- Define the term force. Explain briefly different types of force system with examples.
- Determine the magnitude and resultant of the following set of forces acting on a body:
i) 150N inclined with 30° with East towards North
ii) 200N towards North
iii) 300N towards North West
iv) 310N inclined at 30° with West towards South
- Explain the following:
i) Triangle law of forces.
ii) Parallelogram law of forces.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- First the centroid of the area shown in fig.3(a)
- Find the centroid of T-section as shown in fig.3(b)
- A body consists of a solid hemisphere of radius 4cm and a right circular solid cone of height 12cm. The hemisphere and cone have a common base and are made of the same material. Locate the position of CG of the composite body.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- Define the term concrete. Explain the different grades of concrete with specific application.
- What is concrete mix design? Explain the factors affecting the concrete mix design.
- Explain different grades of structural steels and specific applications. Enlist the different tests conducted on structural steel.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- With the aid of neat sketch explain the following:
i) Corbelling and arches ii) One way spanning slabs
- With the neat sketch explain the components of load bearing structure and R.C.C. framed structures.
- Explain the following:
i) Resolution of forces into components ii) Moment of forces, with example

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- Explain how the following factors causes cracks in building:
i) Foundation movement ii) Settlement of soil
- Enlist different methods used for prevention of cracks.
Explain how choice of materials and specifications help in preventions of cracks.
- Explain any two repair techniques used in repair of cracks in concrete.

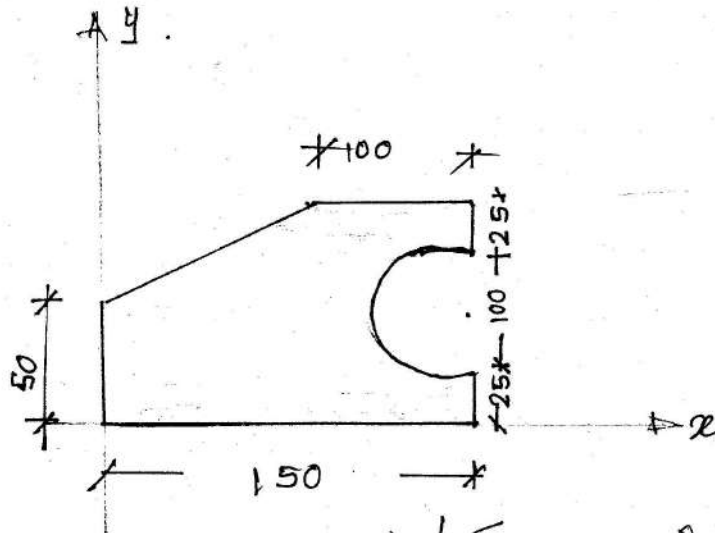


Fig 3(a), Q 3(a)

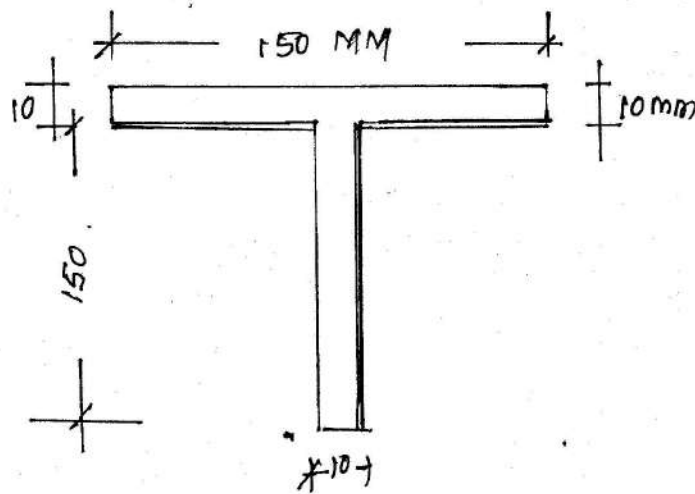


Fig 3(b), Q 3(b)

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BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Interior Design(AR411)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

5 x 3 = 15

- a) Why there is need for an interior designer in addition to architect in field of Architecture? (3 points)
- b) What are the ways we can enhance the aesthetics and planning in design, in any interior space.
- c) List out any three innovative flooring material used in interior design.
- d) Define split AC system. Does VRV consume more electricity?
- e) Explain the term 'measurement sheets'.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- a) i) State any three code of conduct for interior design.
ii) How colour and texture help in creating psychological impact in interior design. (3 points)
- b) i) What is the difference between the complementary colour scheme and analogous colour scheme? (3 points)
ii) Discuss the concept of 'harmonizing colours'. Illustrate it with suitable example.
- c) List out the types of fabrics used for making cushion covers. Give specific three locations where, which fabrics can be used in designing the interior space of living room with respect to its type of furniture.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- a) How does natural and artificial lighting impact in interior design? List any three types of lighting fixtures used in interiors and how do they enhance visual appeal of space. (sketch and explain)
- b) i) How is modular furniture beneficial for space saving and multifunctional use in small apartments and offices? (3 points)
ii) List out any three material and finishing used in making modular furniture and their impact on durability. Illustrate with neat sketches with specific examples.
- c) Write short notes on: i) Venetian blinds ii) Importance of specification in interior design

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- a) Discuss the use of innovative furniture material in modern furniture design.
- b) List out different types of stone cladding finishes. How does stone cladding finish enhance the aesthetics and durability of interiors?
- c) Write about different types of false ceiling used in interiors and their impact on acoustics and lighting.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- a) i) Compare stainless steel, brass, plastic bathroom hardware in term of its durability, maintenance and aesthetics. (3 points each). Which kind of above hardware material choice you would suggest and why?

- b) What are the key principles of designing an efficient washroom layout in a residential building? (Illustrate with neat sketch a typical washroom layout)
- c) Write short note on : i) Smoke detector ii) Estimation and billing using software (3 advantages and 3 disadvantages)

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- a) i) Explain how material specification affect cost estimation and project execution in interior design.
ii) What is abstract billing and why it is important in interior project management?
- b) Prepare an estimate for a stone wall cladding for a wall 4.5m long and 3.0m high. Size of exposed stone tiles is 23cmx15cm and 2.5cm thick. Consider rate of stone tile as Rs.45 per piece. Assume necessary data required.
- c) What are the common errors in measurements and billing? How they can be minimized in interior projects?

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Sustainable Architecture(AR413)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

5 x 3 = 15

- a) Identify three unique characteristics of conventional building in comparison to Green building.
- b) Explain credits in IGBC rating system.
- c) Explain surface runoffs.
- d) Why is energy efficiency dependent on building orientation?
- e) Explain landfill.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain: i) Life cycle of a product ii) Universal accessibility
- b) Compare any two types of rating systems in India with three points each.
- c) Explain with sketches any two building orientation options to achieve energy efficiency.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain three passive architecture measures in Green building design with sketches.
- b) Explain any three site related features to achieve Green building credits for certification.
- c) Explain mandatory requirements in IGBC site module.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain any one case study with respect to its credits and ratings.
- b) Write short note on:
 - i) Construction phase material storage and handling
 - ii) Reduce air pollution during construction
- c) Explain any three strategies of optimal daylight using building orientation.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain reducing water use strategies in buildings during construction and operation stage.
- b) Explain any one strategy each of water recycle and water reuse.
- c) List out any two water elements and one irrigation practice considered as sustainable water use.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- a) What are green certified building materials? Explain any two types.
- b) Explain and sketch any two local materials and mention its sustainability credentials.
- c) List out six steps in handling waste during construction phase.

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Architectural Conservation (AR414)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

5 x 3 = 15

- a) Explain heritage conservation.
- b) Write a short note on consolidation of the fabric.
- c) List any three methods adopted on site for heritage conservation.
- d) Write a short note on Conservation Committee.
- e) List three building materials used traditionally in conservation.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- a) List out the challenges faced by a conservation Architect in the process of retaining the authenticity of heritage sites.
- b) Explain one example of: i) Restoration ii) Preservation
- c) Write short note on the following with respect to heritage buildings: i) Material and structural failure ii) Man made causes

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain any two examples of world heritage sites in India.
- b) Give six points suggesting prevention of deterioration in heritage buildings.
- c) Explain any two cases of heritage projects in Goa undertaken by ASI as adaptive reuse.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- a) Compare surveys and inventories in heritage documentation.
- b) Write short note on: i) Video-graphic documentation ii) Sketching in heritage documentation
- c) Write the process to be followed in carrying out heritage building documentation.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain the regulation of: i) Setbacks ii) Coverage iii) Elevation, related to the conservation area of Panaji city.
- b) List three forts of Goa which are under architectural conservation. What is the role of Conservation Committee in such intervention?
- c) Explain: i) Authentic character ii) Heritage facades

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- a) List out any three building art and craftsmanship in heritage temple architecture of Goa and explain.
- b) Explain retrofitting.
- c) Explain the criteria of traditional building craftsmanship used in restoration of heritage buildings.

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Estimation & Costing (AR502)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer the following Questions:

5 x 3 = 15

- Define the term "Estimation" and state its importance in building construction.
- Write the unit of measurement for the following item of the works: i) Concrete lintel ii) Dado tiles in kitchen iii) Half partition wall in bricks
- List out any three types of items which are billed in cubic meters.
- List out three factors affecting the rates of items of works.
- Explain 'Tender Notice'.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- Vijay wants to build his house with item wise estimate. List out six features to advise Vijay on it.
- Write detailed specifications of the following:
i) Back filling in plinth ii) Internal plaster
- Write out the measurement sheet for any three concrete items of works of a house. Assume required data.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- Prepare an item wise estimate of replacing an Indian W.C with a European pan. Assume necessary data.
- List out six preparations required to be done by an architect before a detailed estimate is prepared of a house.
- Explain three characteristics of BOQ.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- Explain any one type of measurement method. List four characteristics.
- Show calculation of any two items of works of a room 5mx3m using any one measurement method. Draw a relevant sketch with assumed data and dimensions.
- Explain four characteristics of measurement sheet format. Prepare the layout.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- Prepare a bill on an abstract sheet showing any four items of works of a house. Assume necessary data.
- Explain rate analysis of painting works. (assume required data)
- What could be the reason for different rate quoted for laterite masonry wall by two different contractors? (4 reasons)

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- Explain any two types of contract, state two merits and two demerits of each.
- Explain: i) Security deposit ii) Contractors profit in rate analysis calculation
- Write short notes on: i) Contingency in abstract ii) Unit of measurement

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Building Services-II (AR503)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- State the purpose of humidification in an air-conditioning system.
- Define acoustics.
- List any three defects of sound observed in an auditorium.
- State any three advantages of providing thermal insulation for a building.
- Define 'travel distance' in a building for fire safety.
- Define 'air conditioning'.
- State any two qualities that a filter used in an air-conditioning system should possess.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- Elaborate on any six general rules of natural ventilation for buildings.
- Differentiate based on season, between summer air-conditioning and winter air-conditioning.
- Explain the air circulation or distribution system used in a central air conditioned building.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- Elaborate on any three common acoustical defects observed in halls and the corresponding recommended remedies for the same.
- Explain with a neat sketch at least six points to be considered for the acoustical design of a recording studio located on the first floor of a building.
- Explain with a neat labeled diagram any one type sound insulation for a floor and ceiling: i) Concrete floor floating construction ii) Timber floor floating construction

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- Draw a neat labeled diagram (plan and section) of a panoramic elevator for a mid-rise building without machine room.
- Elaborate on the mechanism of the working of an escalator.
- Write short note on: i) Packaged air conditioning ii) Effective temperature

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- Elaborate on the general methods of providing thermal insulation.
- State at least six methods through which heat gain through roofs may be reduced.
- Differentiate between extraction system and supply system of artificial ventilation.

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- Explain the fire resistant construction for floors and roofs of a building. (6 points)
- Elaborate on the fire resisting construction of the escape elements.
- Elaborate on the general fire safety requirements for buildings. (6 points)

BOARD OF TECHNICAL EDUCATION

PORVORIM-GOA

April, 2026 Examinations

Programme: **Architectural Assistantship**

Subject: **Basics of Structural Design (AR504)**

Time Duration: **3 Hrs.**

Max. Marks: **75**

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable additional data if required.

Q.No.1. Answer any five of the following Questions:

5 x 3 = 15

- a) State merits of limit state method over working state method of design.
- b) What is meant by SBC of soil? Give typical values of SBC of soils, laterite and sandy soils found in Goa.
- c) What are the factors affecting in deciding the depth of foundations?
- d) Stating their advantages mention the situation where do you provide the bolted connections?
- e) What is pre-stressed concrete? State various materials used on PSC.
- f) With the aid of sketch, explain the principle of pre-stressed concrete technique.
- g) What are earthquakes? State their effects on structures.
- h) Explain how the earthquakes are measured.

Q.No.2. Answer any two of the following Questions:

2 x 6 = 12

- a) With the aid of neat sketches explain:
i) Singly reinforced section ii) Doubly reinforced section
- b) What is slenderness ratio? Stating its effect, explain how the columns are classified.
- c) What are partial safety factors? State the values used for materials and loads for RCC structures as per Indian Standards.

Q.No.3. Answer any two of the following Questions:

2 x 6 = 12

- a) Distinguish between the following: i) Shallow and deep foundations ii) Isolated and strip footing
- b) Explain the design procedure of footings.
- c) Stating the situations, where they are used, explain the combined footing.

Q.No.4. Answer any two of the following Questions:

2 x 6 = 12

- a) What are built-up sections? Draw sketches of various types of built-up sections used in steel structures.
- b) Draw neat labeled sketch plate girder, showing all components.
- c) With the aid of neat sketch, explain the slab base.

Q.No.5. Answer any two of the following Questions:

2 x 6 = 12

- a) With the aid of neat sketches explain:
i) Tendons ii) End anchorages
- b) What do you understand by losses of pre-stress? Explain various types of pre-stress losses occurring.
- c) Describe the fields of applications of following types of pre-stressed structural elements:
i) Pre-tensioned ii) Post-tensioned

Q.No.6. Answer any two of the following Questions:

2 x 6 = 12

- a) Explain with the aid of neat sketch to show the details of earth crust and interiors.
- b) Explain how the study of previous earthquake help in planning new structures.
- c) Write a short note on earthquake resistant features of masonry structures.
