

## B.Arch. (Sem.-6) (N.S.) Examination

AR 602

## Building Construction-6

March 2019

Time : 3-00 Hours]

[Max. Marks : 100

- Instruction: 1) All questions are compulsory.  
2) Use neat sketches or calculations to illustrate your answer, if necessary.  
3) Figure on right indicate the full marks.

**Q.1 Explain Any Three:****30**

1. Explain types of paint finishes used externally and internally, also explain application method for any one.
2. Name different types of external and internal finishes used in building industries, explain any three in brief.
3. Enlist various type of the glass used in the building, also sketch basic construction details.
4. Sketch typical enlarged detail of any terrace finish with parapet.

**Q.2 Answer in detail Any One.****20**

1. Explain briefly various use of duct / shaft in the multi - storied building.
2. Explain Sunk Slab in detail. Draw neat sketches.

**Q.3 Write Short Notes on Any Five:****30**

1. Toughened Glass
2. Wall Cladding
3. Scum Gutter in swimming pool
4. Garbage disposal duct in high rise building.
5. Texture Paint
6. Wall Paper
7. Special post treatment on Glass
8. Varnishing

**Q.4 Attempt Any One of the following.****20**

1. Sketch proportionately plan and section of swimming pool and describe various elements (terminologies) used.
2. Differentiate between a private and public swimming pool with proper detailed sketches.

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Candidate's Seat No : \_\_\_\_\_

B.Arch. (Sem.-6) (N.S. 2015 + 2015K) Examination

AR 602

Building Construction-6

Time : 3-00 Hours]

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[Max. Marks : 100

**Instructions :** (1) Figures to the right indicates full marks.

(2) Assume suitable data if necessary.

(3) Neat proportionate sketches are necessary to explain theories.

1. Draw an Olympic size swimming pool with detail plan ,services, detailed sections  
Typical through scum channel. 20

2. Explain with sketches. (Any Two ).

(1) Wooden partition wali with glass ,and fixed at floor and ceiling. 25

(2) Fixtures in a toilet of a luxurious residential building.

(3) Duct for toilets in a high rise office building.

(4) Barrel vault .

3. Explain working of a escalator for mall through sections. 15

OR

Explain complete design requirements of a lift for a multi storied building.

4. Explain through sketches steel structure for a factory building. 25

OR

Different types of steel trusses.

5. Explain Different types of concrete. 15

P. T. O.

- Instructions:** (1) Figures to the right indicate full marks.  
(2) Assume suitable data, if necessary.  
(3) Neat proportionate sketches are necessary to explain theories.

Q-1 Draw an Olympic size of **swimming pool**, with detailed plan, layout showing all services, minimum 2 detailed section, Typical wall section through scum channel and through ladder and enlarged details as per the requirement. 25

**OR**

Give Complete plan, Elevation and Section of a **Pedestrian ramp** with Minimum 2 Enlarged Details. Provide appropriate specifications.

Q-2 Give proportionate detailed sketch of following. **Any Two.** 20

1. Wooden **partition wall** fixing at floor and Ceiling
2. Sunk Slab for **Toilet Block**
3. Canopy Structure

Q-3 Explain complete Mechanism of **Escalator** through complete detailed Section. Enhance all required elements. 15

**OR**

Explain **Shell Structures** with all different Types.

Q-4 Explain In brief with neat detailed sketches. **Any Two.** 20

1. Folded Plate Structure
2. Dumb Waiter
3. Space Frame
4. Freight Lift

Q-5 Differentiate between the following. Detailed sketches are necessary. **Any Two.** 20

- a) Partition wall and Panelling
- b) Passenger Lift and Stretcher Lift
- c) Expansion Joint and Seismic Joint
- d) Space Frame and Portal Frame

**B.Arch. (Sem.-6) Examination**  
**AR 603 (NS 2015 + 2015K)**  
**Structures-6**

Time : 2-00 Hours]

March 2019

[Max. Marks : 50

- Instruction: 1. Assume suitable data if necessary.  
 2. Figures to the right indicate full marks.  
 3. Use of non-programmable calculator.

- Q-1 Answer the followings. (05)
- (i) Enlist various forces acting on retaining wall.
  - (ii) Enlist different type of shell with neat sketch.
  - (iii) Enlist various advantages of folded plate over shell.
  - (iv) What is porch?
  - (v) What is structural design? Enlist stages of structural design.

- Q-2 Answer the followings. (Attempt any five) (20)
- (i) Explain principles of position of beam.
  - (ii) Enlist method of pre-stressing and explain any one.
  - (iii) Explain various elements of Flat slab with neat sketches. Mention advantages & disadvantages of Flat slab.
  - (iv) Write a short note on architectural aspects of shear wall.
  - (v) What are the architecture feature the efficiencies of the building during earthquake.
  - (vi) Why strong column and weak beam concept adopted with earthquake resisting structure?
  - (vii) State the guide lines for preparation of structural layout for building.

- Q-3 A pre-stress beam 300 mm x 500mm deep has a span of 7.00 (10)  
 m. it is subjected to an UDL of 60 KN/m. Find stress in the  
 beam at mid span at the end span, If. Pre-stressing force is 350  
 KN applied with an eccentricity of 13 cm below mid depth.  
 Consider total loss in pre-stressing is 17.0%.

OR

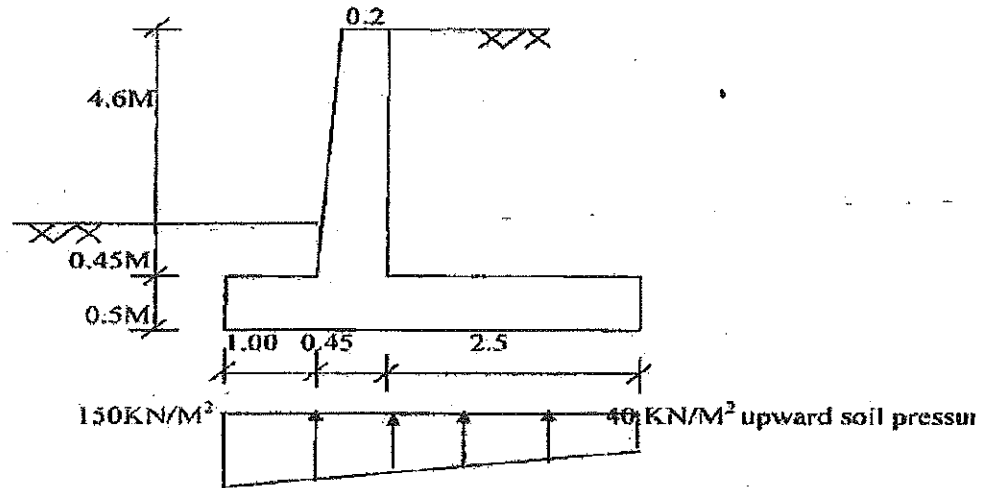
OR

- Q-3 A precast beam 230mm X 450mm is simply supported on (10)  
 effective span of 9m, subjected to load of 110 kn/m and central  
 point load of 75 kn. The initial pre-stressing force of 3000 kn is  
 applied with an eccentricity of 85mm below axis of beam.  
 Consider total loss in pre-stressing is 15%. Determine resulting  
 stress at mid span and at end span. Show variation of stresses  
 for depth of beam in each case.

N1480-2

Q-4

A cantilever retaining wall is constructed to retain 5.05m high (15) horizontal earth fill above ground level. Design the wall and all stability checks. Weight of soil =  $17 \text{ kn/m}^3$ . Angle of repose =  $30^\circ$ . Safe bearing capacity of soil =  $150 \text{ kn/m}^2$ . Coefficient of friction between soil and concrete is 0.55.



OR

Q-4

OR

Design a Stem of cantilever retaining wall to retain an earth (15) embankment 3.5 m high above ground level. The density of earth is  $17 \text{ kn/m}^3$ , angle of repose is  $30^\circ$ . The embankment is horizontal at top. Consider safe bearing capacity of soil is  $200 \text{ kn/m}^2$ , Coefficient of friction between soil and concrete is 0.50, concrete grade M20 and Fe415 Reinforcements. Check for sliding, overturning.

N480-3

**B. Arch. (Sem-VI) Examination (3<sup>rd</sup> Year) (Regular)**  
**AR 603 (New Syllabus 2015)**

**Structure-VI**

**Time: 2 Hours**

**March- 2019**

**Max. Marks: 50**

- Instruction: 1. Assume suitable data if necessary.  
2. Figures to the right indicate full marks.  
3. Use of non-programmable calculator.

- Q-1 Answer the followings. (05)
- (i) Enlist various forces acting on retaining wall.
  - (ii) Enlist different type of shell with neat sketch.
  - (iii) Define Waffle slab.
  - (iv) What is porch?
  - (v) What is structural design? Enlist stages of structural design.

- Q-2 Answer the followings. (Attempt any five) (20)
- (i) Explain positioning and orientation of column
  - (ii) Explain concept of pre-stressing and its application.
  - (iii) What is flat slab? Explain advantages and disadvantages of flat slab.
  - (iv) Write a short note on architectural aspects of shear wall.
  - (v) Explain principles of spanning of slab.
  - (vi) Why strong column and weak beam concept adopted with earthquake resisting structure?
  - (vii) What are the architecture feature the efficiencies of the building during earthquake.

- Q-3 A simply supported pre-stressed concrete beam 10m span. (10)  
Rectangular section 600 x 900 mm is subjected to pre-stressing force of 5600kN at eccentricity of 200mm below the centroid of section. Find top and bottom fibre stresses at transfer and after application of live load 80 kN/m. consider losses of 15%. Draw stress distribution diagram at mid span.

**OR**

**OR**

- Q-3 A pre-stress beam 300 mm x 500mm deep has a span of 7.00 (10)  
m. it is subjected to an UDL of 60 KN/m. Find stress in the beam at mid span at the end span, If. Pre-stressing force is 350 KN applied with an eccentricity of 13 cm below mid depth. Consider total loss in pre-stressing is 17.0%.

P. T. O.

N1480-4

Q-4 Perform the stability checks of cantilever retaining wall and design a stem for the following data. (15)

Height of wall = 4 m, Unit weight of soil =  $17 \text{ kN/m}^3$ , Angle of internal friction =  $30^\circ$ , Safe bearing capacity =  $150 \text{ kN/m}^2$ , Coefficient of friction between base and soil = 0.55.

Height of stem = 4.65m, Thickness of stem = 200 mm at top and 350 mm at bottom. Base width = 2700 mm, Width of toe = 900 mm, Width of heel = 1450 mm, Thickness of base width = 350 mm, Depth of foundation = 1 m, size of key = 350 x 550 mm

OR

OR

Q-4

A cantilever retaining wall is designed to retain the earth 5 m high behind the wall. The unit weight of soil is  $18 \text{ kN/m}^3$  and angle of internal friction is  $22^\circ$ . The bearing capacity of soil is  $130 \text{ kN/m}^2$  and coefficient of friction between base and soil is 0.4. Use M20 and Fe 415. Assume depth of foundation is as 1 m. Fix the dimensions of retaining wall and carry out stability and overturning checks. (15)

x ————— x



## B.Arch. (Sem.-6) Examination

AR 603 (NS)

Structures-6

March 2019

Time : 2-00 Hours]

[Max. Marks : 50

Instructions: (a) Attempt all questions.  
(b) Assume suitable data if necessary.

- Q.1 a. Define Retaining wall and Enlist different types of Retaining walls. 3  
 b. Describe different types of foundation with neat sketch. 3  
 c. Draw neat sketch of hyperbola parabola shell and explain its structural Concept. 4
- Q2 a. Enlist different types of water tanks depending on shape, material and location. 2  
 b. Design a circular water tank resting on ground with flexible base for capacity of 2,50,000 liters. Consider Safe bearing capacity of soil = 180 KN / M<sup>2</sup>,  $m = 13$ ,  $6ct = 120 \text{ N/cm}^2$ ,  $6st = 100 \text{ N / mm}^2$ , Density of water = 10 KN/m<sup>3</sup>, Concrete grade M20 and fe415 HYSD bar. 8
- Q3 a. Design a cantilever retaining wall to retain an earth embankment 3.50 m high above ground level. The density of earth is 18 KN/m<sup>3</sup>, Angle of repose is 30°. The embankment is horizontal at top. Consider safe bearing capacity of soil is 200 KN / m<sup>2</sup>, Coefficient of friction between soil and concrete is 0.50, Concrete grade M20 and fe415 HYSD reinforcements. 8  
 b. Define Flat Slab. 2
- Q4 a. A reinforced concrete Grid floor is to be designed to carry a floor area of size 10 M x 20M. The spacing of rib in mutually perpendicular – direction being 2 M C/C. Live load = 3 KN/M2. Use M20 grade – concrete and Fe415 steel. Calculate load per m<sup>2</sup>. 5  
 b. Write short note (Any two) on, 5  
 1. Waffle Slab.  
 2. Folded plate.  
 3. Difference between Pre tensioning and Post tensioning in Prestressed concrete.
- Q5 a. A prestress beam 230 mm X 600 mm deep has a span of 9.00 M. It is subjected to an Udl of 80 KN/m . Calculate fiber stress in the concrete at mid span and at the end span. If prestressing force of 500KN applied with an eccentricity of 100 mm below mid depth. Consider total loss in - prestressing is 15%. 7  
 b. Enlist principal materials used for prestressed concrete 3
-



## B.Arch. (Sem.-6) (NS) Examination

AR 604

Design Theory

April 2019

Time : 2-00 Hours]

[Max. Marks : 50

**INSTRUCTIONS:**

Time:

- 1) Attempt all question.
- 2) Figures on the right indicate full marks.
- 3) Draw neat sketches wherever required.
- 4) Assume suitable additional data if required.

**Q1. Attempt the following:**

[09]

- a) Explain Sector planning by giving examples of Chandigadh and Gandhinagar.
- b) Explain Evolution from Rural to Urban
- c) Explain the Indian town planning and take suitable example

**Q2. Write in Brief any Two:**

[08]

- a) Growth and decay of Industrial city Bradford
- b) Garden city movement of Sir Ebenezer Howard
- c) Neighbourhood

**Q3. Fill in the blanks:**

[08]

1. Ornament and Crime easy on Design theory was written by \_\_\_\_\_.
2. Toward an Architecture book was written by \_\_\_\_\_ Architect.
3. Modern Indian names of known Urban Planners are \_\_\_\_\_ and \_\_\_\_\_.
4. \_\_\_\_\_ is the capital city of state of Andra Pradesh.
5. Pattern Language book is written by \_\_\_\_\_.
6. Architect Louis Khan designed \_\_\_\_\_ capital of \_\_\_\_\_ country.

**Q4. Write about the Town Planners and their contributions: Any Three [09]**

- a) Patrick Geddes (During British Rule in India)
- b) Charles Correa (Vashi and Belapur Housing)
- c) Christopher Alexander (The Oregon Experiment)
- d) Louis Mumford
- e) Jane Jacobs

**Q5. Compare the following any Two**

[08]

- a) Group Housing and Gated Community
- b) Concept of block Flat and Row Houses
- c) European Squares and Indian Falias

**Q6 Write on any Two cities**

[08]

- a) Jaipur, b) New Mumbai c) Jamshedpur d) New Delhi e) Vidhyanagar



## B.Arch. (Sem.-6) (NS 2015K) Examination

AR 605

Estimation, Costing

April 2019

Time : 2-00 Hours]

[Max. Marks : 50

## INSTRUCTIONS:

- Attempt all Questions.
- Figures to the right indicate full marks.
- Assume suitable data if required.
- Use of non-programmable calculator is permitted.

- 
- Q.1 Work out quantities of listed items below from figure 1 and prepare a measurement sheet as well. 20
- |                            |                               |
|----------------------------|-------------------------------|
| [A] PCC 1:4:8              | [F] Footing                   |
| [B] Lime Mortar            | [G] Brickwork                 |
| [C] Cement Mortar Bedding  | [H] Tile Work                 |
| [D] 100 mm thk. R.C.C Slab | [I] 25 mm thk. I.P.S.         |
| [E] Doors & Windows        | [J] 125 mm thk. R.C.C. Lintle |
- Q.2 Write any **four** short note of the following. 12
- [A] Explain long wall method and short wall method.
- [B] What is costing? Why Cost is important?
- [C] Which items should be included in reports?
- [D] Enlist the types of estimates.
- [E] Differentiate between supplementary and revised estimate.
- Q.3 Explain the following terminologies. [Any Four] 08
- [A] Contingency
- [B] Work-charged Establishment
- [C] Departmental Charges
- [D] Schedule of Rates
- [E] Sub-Head Items
- Q.4 Write short note on any **two** of the following. 10
- [A] Detailed Estimate
- [B] Preliminary Estimate
- [C] A.R. and A.M. Estimate

**B. Arch. (Sem-VI) Examination (3<sup>rd</sup> Year) (Regular)**  
**AR 605 (New Syllabus 2015K)**

**Estimation Costing and Specifications**

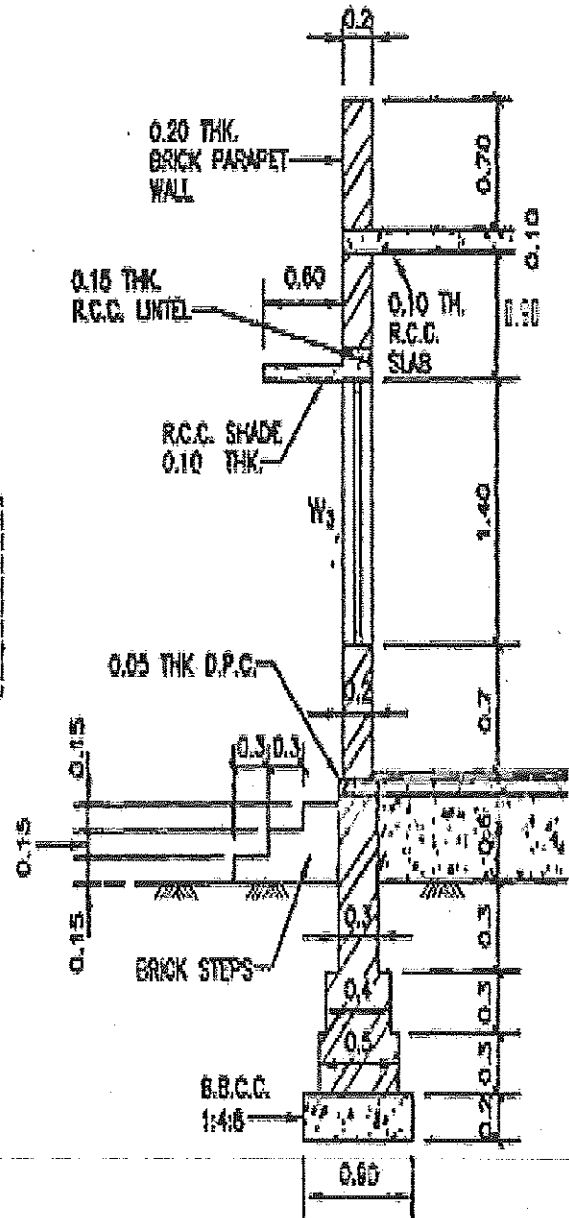
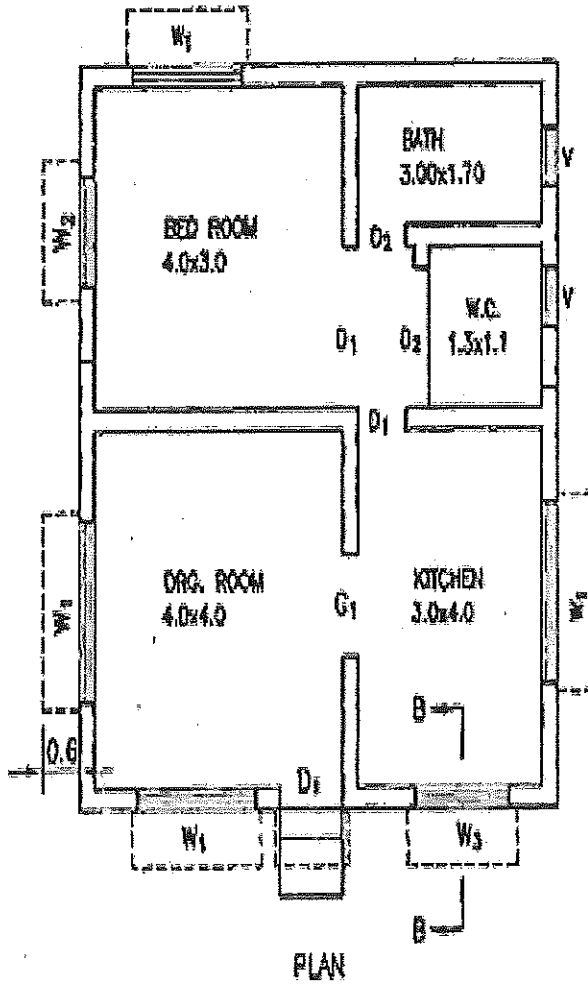
**Time: 2 Hours**

**March -2019**

**Max. Marks: 50**

- Q-1 Define the following terms. (Attempt any five). (10)
- a Define specification.
  - b List out the various types of labour.
  - c What is task work? On which factors does it depend?
  - d What is unit of measurement?
  - e What is Contingencies?
  - f What is prime cost?
- Q-2 Answer the following (Attempt any four). (20)
- a Discuss the essential principles of writing good specifications.
  - b What is an Estimate? Differentiate between approximate estimate and detailed estimate.
  - c What is Rate analysis? Explain the factors that affect rate analysis.
  - d Explain general specification of Second class building.
  - e What is specification? Write detail specification of Cement concrete (1:4:8) for foundation.
  - f Write a short note on advantages and disadvantages of Open specifications.
- Q-3 Calculate following :-
- a Calculate the Rate Analysis for 15 mm thick Smooth cement plaster in C. M. 1: 4 and find out Rate for 100 m<sup>2</sup>. (05)
  - b The plan of a residential building is shown in figure below. (15)  
 Calculate quantity of following items in a quantity by Centre Line method.
    1. Excavation in foundation.
    2. Earth filling in plinth.
    3. Plain Cement Concrete (P.C.C.) in foundation in 1:3:6.
    4. Brickwork in foundation.
    5. Brickwork in super structure in cement mortar 1:4.
    6. Interior Plaster in super structure in cement mortar 1:6.
    7. R.C.C. work in Slab, Chhajja and Lintel (bearing 15cm).

# NOIS-3



**DOOR-WINDOW SCHEDULE**

- $D_1 = 1.10 \times 2.10$
- $D_2 = 0.90 \times 2.10$
- $G_1 = 1.20 \times 2.10$
- $W_1 = 1.80 \times 1.40$
- $W_2 = 1.20 \times 1.40$
- $W_3 = 1.50 \times 1.40$
- $V = 0.60 \times 0.60$

Fig. 1 RESIDENTIAL BUILDING

**NOTES:-**

ALL DIMENSIONS ARE IN METERS  
NOT TO SCALE







## B.Arch. (Sem.-6) (NS) Examination

AR 605

Estimation, Costing

April 2019

Time : 3-00 Hours]

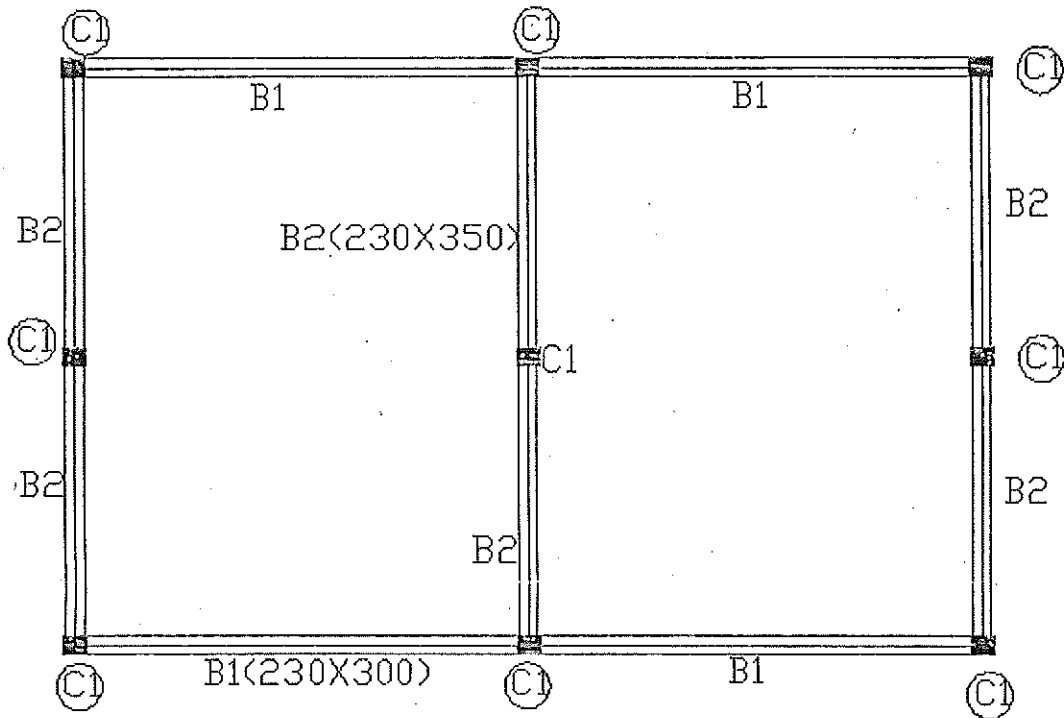
[Max. Marks : 50

**Time:**

- ❖ Figures to the right indicate full marks.
- ❖ Answer must be precise and up to the points.

- Q1**
- (1) Write detail specifications (Any two) 8
- a) R.C.C. Slab in M20 Concrete b) II<sup>nd</sup> Class Brick masonry work in Super structure
- c) Excavation for foundation
- (2) write difference between brief and detail specifications 2
- Q2**
- a) Do Rate Analysis for 15mm thick Smooth cement plaster in C.M. 1: 4, and find out Rate per Sqm. 5
- b) What is Rate Analysis? Discuss factors affecting Rate Analysis. Also, State what "SOR" is. 5
- Q3**
- a) What is the importance of specification , rate analysis while preparing BOQ 2
- b) Explain BOQ and SOR 2
- c) Estimate the inside painting quantities for building shown in figure no. -I. 4
- d) Estimate flooring quantities for building shown in figure no. -I. 2
- Q4**
- Estimate following quantities for building shown in figure no. I
- a) Brick masonry in cement mortar (1:6) in super-structure (ht. difference bet GL. -PL is 1.5 M, G.L.-lintel is 2.1 M, slab ht is 3.2M). 5
- b) 300 mm. thick Brick bat cement concrete (1:5:10) in foundation. 3
- c) Enlist the common main items of civil work to be estimated for a residential building. 2
- Q5**
- A. Calculate the quantity of Cement Concrete 1:2:4 for R.C.C. beam and Slab shown in figure-I below, 8

NO16-2



Grid of Column is 6M X 6M/c In Both Direction  
SLAB-125 MM THK.

( Consider wall thickness is 230 mm. )

Figure-I

B. Calculate the quantity of R.C.C. Copping from figure - I.

2

X → Y

## B.Arch. (Sem.-6) (NS) Examination

AR 606

## Heritage &amp; Conservation

April 2019

Time : 2-00 Hours]

[Max. Marks : 50

TOTAL TIME: 2 HOURS

**Instructions:**

- 1) Read Questions carefully.
- 2) Attempt all questions.
- 3) Assume suitable data where necessary.
- 4) Draw neat sketches whenever necessary.

## 1. Write short note on following: (Any Two)

(10)

- a) Ethics of Conversation.
- b) Describe Tangible Heritage and Intangible Heritage.
- c) Adaptive reuse of Heritage building, with one example.

## 2. What is a Conversation? Explain criteria for Conversation of Buildings.

(10)

**OR**

## 2. Explain cause of Decay of the World Heritage Site with suitable example.

(10)

## 3. Describe Listing and Grading of heritage buildings.

(10)

**OR**

## 3. Discuss Conversation Ethics.

(10)

## 4. Answer in detail : (Any One)

(10)

- a) Various factors affecting Deterioration of a Heritage Building.
- b) Determine the difference between Rehabilitation and Reuse.

## 5. Answer following : (Any Five)

(10)

- a) Tangible Heritage
- b) Intangible Heritage
- c) Adaptive Reuse
- d) Rehabilitation
- e) Heritage buildings
- f) Preservation
- g) Conservation

— X —

