

2/53

1903E1831

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

B.Arch. (Sem.-5) (N.S. 2015+2015K) Examination

AR 502

Building Construction-5

March 2019

Time : 3-00 Hours]

[Max. Marks : 100

- 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 Design and draw **Underground water tank** for 3000 litres capacity and explain underground water tank and sump in detail. Give detailed calculation. 20

OR

1. Give a detailed Isometric view of – **formwork** for staircase.
2. Describe gravity **retaining wall** in detail with neat sketches.

Q-2 Explain sources of dampness in buildings and its preventive measures. Sketch appropriate **damp proofing** details at all building conditions. 20

OR

1. Detail sketch for **formwork** of Beam and Slab
2. Describe pile method of **underpinning**.

Q-3 Mention various factors responsible for **heat transfer in a building** and discuss their effects on various building elements. 20

Q-4 Explain in brief with neat detailed sketches. Any two. 20

1. Describe removal of **form work** with appropriate sketches.
2. What are the points to be considered while **scaffolding work**.
3. Discuss methods of **termite proofing**.

Q-5 Differentiate between the following: (any 3) 20

- a) **Thermal Insulation** of wall and thermal insulation at slab level
- b) Counterfort **retaining wall** and buttresses retaining wall
- c) Flying **shore** and dead shore
- d) Single layer **scaffolding** and double layer scaffolding

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E 1831

**B.Arch., Sem.- 5 (3 rd Year)**  
**AR -502 : Building Construction -5**  
**(New Syllabus -2015-~~K~~(ATKT))**

**Time : 3 Hours )**

**( Max. Marks: 100**

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

1. How to retain the earth on a sloping site? Explain different types of retaining Structures. 20

2. Explain Bricklayer's scaffolding. 20

**OR**

Explain steel scaffolding.

3. Explain with neat sketches formwork for columns and beams. 20

4. Explain in detail ( Any Two) 20

(1) Damp proofing materials.

(2) Thermal insulation of walls and thermal insulation at slab level.

(3) Sound insulation of an auditorium.

5. Design exposed brick compound wall for a residence with steel gate.  
( Plan, Sections, Elevations, with details.) 20

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2153

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1903E1832

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

B.Arch. (Sem.-5) (N.S.) Examination

AR 502

Building Construction-5

March 2019

Time : 3-00 Hours]

[Max. Marks : 100

- Instructions:** (1) All questions are compulsory.  
(2) Figures to the right indicate full marks.  
(3) Draw neat and clean sketches.  
(4) Assume additional data, if necessary and state the same clearly.

**Q-1) Answer the following in detail. (ANY TWO) (30)**

- 1) Draw and explain in detail any two types of large span structure.
- 2) Differentiate between lift with machine room and lift without machine room.
- 3) Differentiate between P waves and S waves.

**Q-2) Differentiate between the following: (ANY TWO) (20)**

- 1) Expansion Joint and Contraction Joint
- 2) Focal point and Epicenter with reference to earthquake
- 3) Passenger Lift and Goods Lift
- 4) Barrel vault and Dome

**Q-3) Answer the following. (ANY TWO) (30)**

- 1) Differentiate between lift with machine room and lift without machine room.
- 2) Explain different types of joints and their importance in buildings.
- 3) What is an earthquake resistant structure? Explain its behavior during earthquake.

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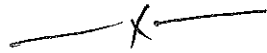
E 1832-2

Q-4) Define the following terms with neat sketches: (ANY FOUR) (10)

- 1) Joint fillers
- 2) Epicenter
- 3) Magnitude
- 4) Lift cabin
- 5) Gradient
- 6) Space frame

Q-5) Write Short Notes on: (ANY TWO) (10)

- 1) Reentrant Corners
- 2) Shear wall
- 3) Pounding effect



## B.Arch. (Sem.-5) (N.S. 2015+2015K) Examination

AR 504

History of Architecture-4

March 2019

Time : 2-00 Hours]

[Max. Marks : 50

- Instructions:** (1) Figures to the right indicate full marks.  
 (2) All questions are mandatory.  
 (3) Neat proportionate sketches are necessary to support the theories.

- Q-1 Answer the following in detail. (Any one) (12)
- New materials, new techniques and new buildings types demanded a new architecture.' Elaborate the statement in reference to Industrial revolution taking one suitable example.
  - What were the salient features of Neoclassism in France? Explain them with one suitable example showcasing its elements.
- Q-2 Write short notes on the following: (Any two) (08)
- Crystal palace, London
  - Paris Opera, Paris
  - Chizwick House, Chizwick, West London
  - Royal Pavilion, Brighton
- Q-3 Answer the following in detail. (Any one) (12)
- Explain the French style planning in old Pondicherry highlighting its urban nature.
  - Explain the British Colonial style planning in Delhi highlighting its urban nature.
- Q-4 Write short notes on the following: (Any two) (10)
- Basilica of Bom Jesus, Old Goa
  - Eiffel Tower, Paris
  - Writers building, Kolkata
  - The Consulate Building, Pondicherry
- Q-5 Sketch the following (Any two) (08)
- Arc De Triumph, Paris
  - Brooklyn Bridge, New York
  - Plan of Old Pondicherry with neat labelling
  - Salient features in façade of any colonial building

E1846-2

**B. ARCH. (Sem-V) 3<sup>rd</sup> YEAR**  
**AR-504 HISTORY OF ARCHITECTURE – IV (ATKT)**  
**NEW SYLLABUS-2015 K**

**Time: 2 Hours**

**Max. Marks: 50**

- Instructions:
- (1) All Questions are compulsory.
  - (2) Use neat sketches to illustrate your answer.
  - (3) Assume suitable data wherever necessary.
  - (4) Figures on right indicate the full marks.

**Q.1 Explain in details any 1 of following:**

**Marks 12**

"Industrial Revolution brought in many changes in society, art, architecture and planning" Explain with examples.

**OR**

Discuss the historical themes and revival of styles from earlier eras like Renaissance, Roman, Greek & Gothic. Give examples of at least two styles in detail with appropriate sketches.

**Q.2 Write a short note on any 3 of following: (3 out of 5).**

**Marks 18**

- a) Briefly explain the features of Neo-classical architecture in France.
- b) Write a short note on the impact of Industrial revolution on transportation system.
- c) Write a short note on the works of Sir Herbert Baker in India.
- d) Explain briefly the planning and architectural features of "white town" in Pondicherry.
- e) Write a short note on Portuguese architecture in India.

**Q.3 Explain in details any 1 of following:**

**Marks 10**

Explain in detail planning and design of Lutyens Delhi with appropriate sketches.

**OR**

The steel skeleton or frame work made large spans and enclosing of large spaces possible. Explain with sketches.

**Q.4 Sketch the following with appropriate labeling.**

**Marks 10**

- a) Eiffel Tower
  - b) Crystal Palace
  - c) Victoria Terminus at Mumbai
  - d) India Gate
  - e) Basilica of Bom Jesus, Goa
-

## B.Arch. (Sem.-5) (N.S.) Examination

AR 504

History of Architecture-4

March 2019

Time : 2-00 Hours]

[Max. Marks : 50

Q1 Describe major works of either Frank Lloyd Wright OR Meis Van der Rohe (9)  
highlighting his contributions to modern architecture.

Q2 Write briefly the role of engineers in shaping the 20<sup>th</sup> century architecture. Explain by  
giving appropriate examples of materials, technology and works.

OR (7)

Write briefly on the effects of industrialization on modern architecture and urbanization.

Q3 Write short notes on any three: (9)

- a) Arts and crafts movement.
- b) Neo-Classical
- c) De Stijl
- d) Art Nouveau
- e) Bauhaus

Q4. Explain the revival of historical styles like Romansque and Gothic stating suitable  
examples. (9)

Q5) "HOUSE IS A MACHINE TO LIVE IN." Elaborate the statement with  
examples and illustrations. (7)

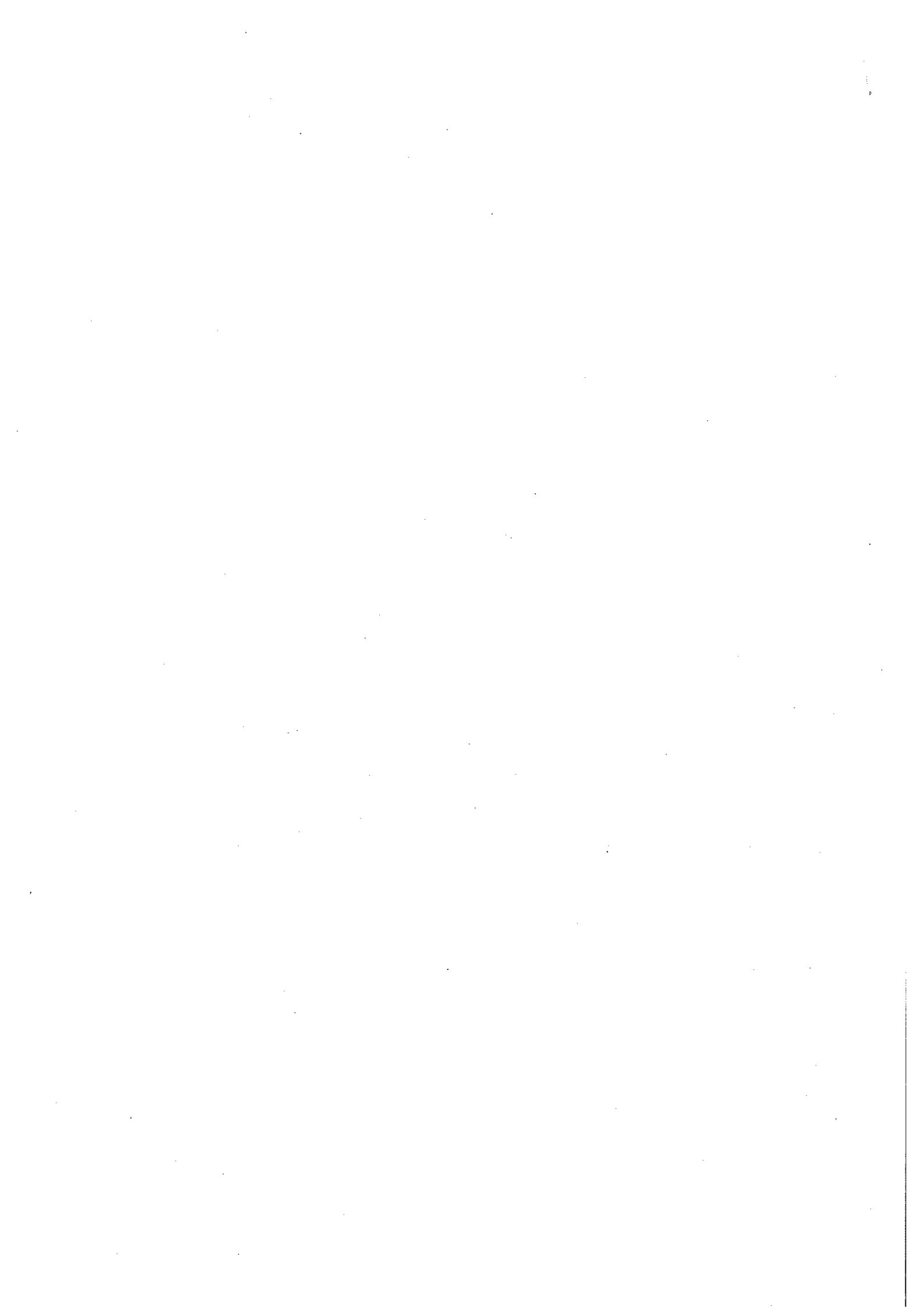
OR

Explain "ORNAMENT IS A CRIME." statement with example and illustrations.

Q6) Write short notes on any three : (9)

1. Crystal Palace
1. Eiffle Towers.
2. Schroder House
3. Falling Water
4. Villa Rotunda

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## B.Arch. (Sem.-5) (N.S. 2015+2015K) Examination

AR 503

Structure-5

March 2019

Time : 2-00 Hours]

[Max. Marks : 50

- Instruction: 1. Use of non-programmable calculator, steel table and code IS 800 is permitted.  
2. Figures to the right indicate full marks.  
3. Assume suitable data if necessary.

Q-1 Attempt any Six. (24)

- (i) Explain concept of structural steel and categories of structural steel.
- (ii) Give advantages and disadvantages of plate girders over trusses.
- (iii) Write a short note on castellated beam and Vierendeel truss.
- (iv) Explain advantages and disadvantages of welded connection.
- (v) Explain concept of compound column with neat sketch.
- (vi) Give the full form of ISWB, ISSC, ISA, and ISJT with sketch.
- (vii) Classify the following section ISHB 200 @ 33.3 kg/m used as column. Consider  $f_y = 250$  MPa.

Q-2 (i) Design a laterally supported steel beam of span 6 m loaded with factored UDL of 40 KN/m including self-weight of steel beam. Check for shear strength and deflection only. Assume  $f_y = 250$  MPa. (8)

OR

Q-2 (i) A simply supported beam is laterally supported over the span of 6m and loaded by working uniformly load 20 KN/m over the entire span and 60 KN at center. Design the beam using ISMB section and check shear strength and deflection only. Assume  $f_y = 250$  MPa. (8)

Q-3 (i) Design a steel column to carry working axial load of 1000 KN. The length of column is 5.6 m with both ends effectively held in position and restrained against rotation. Assume  $f_y = 250$  MPa. (8)

Q-4 (i) Design a welded plate girder for a simply supported bridge deck beam with clear span 24 m, subjected to UDL 30 KN/m (excluding self-weight) and two concreted loads of 200 KN each at 6 m from each end use Fe 250. Check for shear only. (10)

OR

Q-4 Answers the following.

- (i) An ISHB 300 @ 58.8 Kg/m is to be used as a short column. Determine its compressive strength and assuming  $f_y = 250$  MPa. (6)
- (ii) Draw neat sketch of gantry girders with plan and elevation. (4)

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B. Arch. (Sem-V) Examination (3<sup>rd</sup> Year) (ATKT)  
AR 503 (New Syllabus 2015)

Structures-V

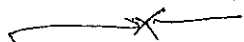
Time: 2 Hours

March- 2019

Max. Marks: 50

- Instruction: 1. Use of non-programmable calculator, steel table and code IS 800 is permitted.  
2. Figures to the right indicate full marks.  
3. Assume suitable data if necessary.

- Q-1 Attempt any Six (24)
- (i) Explain advantages and disadvantages of steel as a structural material.
  - (ii) Give the full form of ISWB, ISMC, ISA, and ISJT with sketch.
  - (iii) Write a short note on castellated beam with sketch.
  - (iv) Explain advantages and disadvantages of welded connection.
  - (v) Explain compound column with neat sketch.
  - (vi) Write short note on pile foundation.
  - (vii) Explain pitch, gauge, end distance and edge distance in riveted connection with sketch.
- Q-2 (i) A hall inside clear dimensions of 6m X 30m having 300 mm thick masonry walls and 9 steel beams to supports 130 mm thick concrete slab. Design a steel beam to support if the floor finish load is 1 KN/m<sup>2</sup>, live load is 5 KN/m<sup>2</sup> and  $E=2 \times 10^5$  N/mm<sup>2</sup>. (08)
- OR OR
- (i) Design a laterally supported steel beam of span 5.5 m loaded with working UDL of 30 KN/m including self-weight of steel beam. Check for shear strength and deflection only. Assume  $f_y=250$  MPa. (08)
- Q-3 (i) Design a steel column to carry axial load of 650 KN. The length of column is 5 m and effectively held in position at both end but restrained against rotation at one end only. Assume  $f_y=250$  N/mm<sup>2</sup>. (08)
- Q-4 (i) Design a welded plate girder for a simply supported bridge deck beam with clear span 20 m, subjected to UDL 30 KN/m (excluding self-weight) and two concentrated loads of 200 KN each at 5 m from each end use Fe 250. Check for shear only. (10)
- OR
- Q-4 Answers the following.
- (i) An ISHB 200 @ 37.3 Kg/m is to be used as a short column. Determine its compressive strength and assuming  $f_y$  250 MPa. (6)
  - (ii) Classify the following section ISHB 200 @ 33.3 kg/m used as column. Consider  $f_y=250$  MPa. (4)



## B.Arch. (Sem.-5) (N.S.) Examination

AAR 503

Structure-5

March 2019

Time : 2-00 Hours]

[Max. Marks : 50

- Instruction: 1. Use of non-programmable calculator, steel table and code IS 800 is permitted.  
2. Figures to the right indicate full marks.  
3. Assume suitable data if necessary.

- Q-1 Attempt any Six. (24)
- Explain concept of structural steel and categories of structural steel.
  - Give advantages and disadvantages of plate girders over trusses.
  - Write a short note on castellated beam and Vierendeel truss.
  - Explain advantages and disadvantages of welded connection.
  - Explain concept of compound column with neat sketch.
  - Give the full form of ISWB, ISSC, ISA, and ISJT with sketch.
  - Classify the following section ISHB 200 @ 33.3 kg/m used as column. Consider  $f_y = 250$  MPa.
- Q-2 (i) Design a laterally supported steel beam of span 6 m loaded with factored UDL of 40 KN/m including self-weight of steel beam. Check for shear strength and deflection only. Assume  $f_y = 250$  MPa. (8)
- OR
- Q-2 (i) A simply supported beam is laterally supported over the span of 6m (8) and loaded by working uniformly load 20 KN/m over the entire span and 60 KN at center. Design the beam using ISMB section and check shear strength and deflection only. Assume  $f_y = 250$  MPa.
- Q-3 (i) Design a steel column to carry working axial load of 1000 KN. The (8) length of column is 5.6 m with both ends effectively held in position and restrained against rotation. Assume  $f_y = 250$  MPa.
- Q-4 (i) Design a welded plate girder for a simply supported bridge deck beam (10) with clear span 24 m, subjected to UDL 30 KN/m (excluding self-weight) and two concentrated loads of 200 KN each at 6 m from each end use Fe 250. Check for shear only.
- OR
- Q-4 Answers the following.
- An ISHB 300 @ 58.8 Kg/m is to be used as a short column. Determine (6) its compressive strength and assuming  $f_y$  250 MPa.
  - Draw neat sketch of gantry girders with plan and elevation. (4)





## B.Arch. (Sem.-5) (N.S. 2015+2015K) Examination

AR 505

Building Services-2 (Electrical)

Time : 2-00 Hours]

March 2019

[Max. Marks : 50

## Note:

- All questions are compulsory
- Support your answer with sketches and figures if required
- Assume suitable data wherever required
- Figures to the right indicate full marks

- Q-1,           1)    write any two properties of a good electrical material           10  
                   2)    Explain the need for earthing of electrical installation
- OR
- Discuss briefly the types of ac. System & explain in detail the system  
 Use for cooling and dehumidification
- Q-2   Define the term dry bulb temperature and wet bulb temperature           05
- Q-3   List various components of air –conditioning and give their function.       05
- Q-4   Principle of refrigeration   06
- Q-5   explain the use of ELCB   06
- Q-6   write short note :( any three)   18
- 1,     AC and DC current
- 2,     Types of wiring system
- 3,     Various ducting lay out
- 4,     Day light factor

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E188-2

Candidates no: \_\_\_\_\_

**B. Arch (Semester-V) ATKT Examination  
AR-505 Building Services – I  
March 2019  
(New Syllabus-2015)**

[Time: 2 Hours]

[Total Marks: 50]

**INSTRUCTIONS:**

- Attempt all Questions.
- Figures to the right indicate full marks.
- Assume suitable data if required.

- Q.1 Define & explain any **Five** of the following terminologies. [3 Marks Each] 15
- |                       |                          |
|-----------------------|--------------------------|
| [A] Dew Point         | [F] Sensible Heating     |
| [B] Humidity          | [G] Dry Bulb Temperature |
| [C] Relative Humidity | [H] Wet Bulb Temperature |
| [D] Lux               | [I] Voltage              |
| [E] Luminance         | [J] Current              |
- Q.2 Write a note on importance of knowledge of building services in the field of Architecture. 05
- OR**
- Q.2 Differentiate between single phase & three phase supply.
- Q.3 Write the correct answer of any **Four** for the following. [3 Marks Each] 12
- [A] Explain the Sources of Energy.
  - [B] Write a short note on different types of wiring systems.
  - [C] What is earthing? State the different types and explain any one in brief.
  - [D] Write a short note on different types of switches based on their classification and usages.
  - [E] Differentiate between AC Supply and DC supply.
- Q.4 Write the correct answer of any **Four** for the following. [3 Marks Each] 12
- [A] Explain the key principles of architectural lighting.
  - [B] Which factors affect the electrical wiring installation?
  - [C] Explain the controls for lighting and daylighting.
  - [D] Explain the tips to control glare index.
  - [E] Which issues should be considered while providing daylight.
- Q.5 Write any **Two** of the following. [3 Marks Each] 06
- [A] What is the process of Humidification, dehumidification.
  - [B] Explain the application of psychometric chart.
  - [C] Classification of air conditioning system and explain any one in brief.
  - [D] Differentiate between air conditioner and air cooler.
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**B.Arch. (Sem.-5) (N.S.) Examination**  
**AR 505**  
**Building Services-2 (Water Supply)**  
**March 2019**

**Time : 2-00 Hours]**

**[Max. Marks : 50**

**Instructions:**

- (1) All Questions are compulsory.
- (2) Use neat sketches or calculations to illustrate your answer, if necessary.
- (3) Figures on right indicate the full marks.

- 
- |            |  |    |
|------------|--|----|
| <b>Q-1</b> | Explain water supply system  | 06 |
| <b>Q-2</b> | writes about types of valve used in water distribution system.   | 05 |
| <b>Q-3</b> | principle of House Drainage system   | 05 |
| <b>Q-4</b> | describes types of trap and explains any one in detail.  | 06 |
| <b>Q-5</b> | write short note: (any three)<br>A) Two pipe plumbing system<br>B) Single stack system<br>C) Septic tank<br>D) Sludge soak pit                                     | 18 |
| <b>Q-5</b> | Explain the system of conveyance of waste water from bathroom<br>And kitchen to municipal sewer<br>Or<br>Explain in brief rural water supply and sanitation scheme | 10 |
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**B.Arch. (Sem.-5) (N.S.) Examination****AR 506****Building Regulation****March 2019****Time : 2-00 Hours]****[Max. Marks : 50**

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

- Q-1** Define any Five. (10)
1. Building Control line.
  2. Set back,
  3. Dwelling unit,
  4. Margin,
  5. Mezzanine floor,
  6. Low rise and High rise building.
- Q-2** (a) Define Floor Space Index and Discuss its effect on development? (4)  
(b) Define Building plan, Layout plan, Site plan and Key plan. (4)  
(c) Enlist necessary documents to be attached to the application of – Building permission. (2)
- Q-3** (a) Write Short note on, (Any Two) (6)
- (1) Requirements of Parking,
  - (2) Central Business District.
  - (3) Enlist areas exempted in calculation of FSI.
- (b) Explain Town Planning Scheme in detail. (4)
- OR**
- (b) Write full name of SEZ, SIR, CRZ and CBD. (4)
- Q-4** A plot of size 22 m. x 45 m. with 12 m. wide road on the shorter side. Consider maximum permissible built up area at ground floor is 40 % And maximum permissible F.S.I. = 1.80, Prepare a sketch and a table Of Plot area, Maximum permissible built up area, Total built up area based on FSI, Proposed built up area on each floor and proposed FSI used. Consider Maximum permissible building height is G + 4. (10)
- Q-5** (a) Describe the objectives of building regulations. (5)  
(b) Define Common Plot, Explain briefly the minimum area of common – plot and minimum one side of the common plot, How much built up is allowed in common plot and for what purpose. (5)
- OR**
- (b) calculate total built up area for the plot of 60 m. x 67 m. having 1.85 FSI. (5)
-

