AIKTC/KRRC/SoA/ACKN/QUES/ 2018/19/ Date: 25/07/2019

School: SoA-CBSGS Branch: SoA SEM: IV

To,
Exam Controller,
AIKTC, New Panvel.

Dear Sir/Madam,

Received with thanks the following **Semester/Periodic** (Regular) question papers from your exam cell:

Sr. No.	Subject Name	Subject Code	Format		No. of Copies
			SC	HC	
1	Architectural Building Construction			✓	02
2	Theory and Design of Structures			✓	02
3	Architectural Building Services			✓	02
4	Humanities			✓	02
5	Architectural Representation & Detailing				

Note: SC – Softcopy, HC - Hardcopy

(Shaheen Ansari)
Librarian, AIKTC

B.ARCH. SECOND YEAR- SEMESTER IV
APRIL 2019 REGULAR/KT EXAM

Subject: **Architectural building construction and materials - iv**
Maximum Marks- 50
Date:

DURATION: **3 hours**

Notes:

- All Questions are compulsory.
- Numbers on the right hand side indicate marks for each question.
- Start answer of every new question on a new page.
- Assume suitable data wherever necessary.
- All sketches and drawing should be properly labelled and must have required nomenclature and dimensions.

Q.I Answer the following question with appropriate sketches.(any 5) **(marks - 20)**

a. Column splicing detail.
b. Steel Joist Beam to Steel column.
c. Castella beam.
d. Ridge detail of a steel truss.
e. Detail sectional elevation of steel spiral staircase foundation using circular hollow section (φ 230 mm)
f. Detail cross section of Steel and RCC composite slab.
g. Draw plan and elevation of grillage foundation.

Q.II Draft the following in suitable scale. (any 1) **(marks – 20)**

a. Design a steel mezzanine floor of 4.0mx3.5m in a box factory of 9.0m x 17m with a provision of a spiral steel staircase . The max. height of the structure is 6.0m, the height of the finished level of the mezzanine floor is 2.5m from the finished floor level of the ground. 2 Nos. C- channel (100 x 450 x 12mm) for column ; 230 mm thick wall ; Joist beam 150 x 200 x 10mm placed at 450 c/c with help of M.S. plate at top and finished floor with any material.

Draw a plan and 2 sections at scale of 1:20 showing connections of Main beam, joist beam and flooring plate.

OR

b. Design a lightweight steel truss in a box factory of 9.0m x 17m by using equal angles (2 nos.) of 75 x 75 x 8mm, strut 50 x 50 x 6mm with 10mm thick gusset plate.

Draw a elevation at suitable scale showing connection of rafters, strut and gusset plate.

Show gutter and eaves fixture in detail.

Q.III Answer the following questions. (any 10) (marks - 10)

a. **Which of the following not the process for manufacturing of steel**
   1. Bessemer process
   2. Electric Arc process
   3. Open hearth process
   4. Hydrometallurgical extraction

b. **Which of the following is mechanical treatment of steel**
   1. Pressing
   2. Forging
   3. Rolling
   4. all of the above

c. **Facia is fixed to the end of the rafter.**
   1. Above statement is True
   2. Above statement is False
   3. Above statement is both True & False.
   4. Above statement is neither True nor False.

d. **Choose the correct order of Carbon content in the following alloys**
   1. Wrought iron < Cast Iron < Mild Steel
   2. Cast Iron < Mild Steel < Wrought Iron
   3. Wrought iron < Mild Steel < Cast iron
   4. Cast Iron < wrought Iron < Mild Steel

e. **Which of the following is type/s of weld**
   1. fillet weld
   2. butt weld
   3. Both
   4. None of the Above

f. **Draw a sketch of Battening and Lacing of Column**

g. **State at least three advantages and Disadvantages each of steel structure over RCC Frame structure.**

h. **Draw the sketch of equal and unequal angle indicating flange, fillets and web**

i. **In a factory building, steel trusses are placed 4.0m c/c. Clear span of the truss is 9.0m. Find the effective span, if thickness of the wall is 230mm.**

j. **State two Advantages of Metal Inert Gas (MIG) welding over Manual metal arc (MMA) welding.**

k. **Draw a Sketch explaining Shear Failure in Steel Structure.**

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SECOND YEAR B.ARCH - SEM 4 (APRIL 2018-19 REGULAR EXAM)

SUBJECT: THEORY AND DESIGN OF STRUCTURES IV **Date: 15/04/2019**

TOTAL MARKS: 50 **Duration: 2 hours**

Notes:

1) **Question No 1 is compulsory.**
2) **From question no 2, 3, 4 - Attempt any two questions.**
3) Assume $E = 2 \times 10^5$ MPa, $\alpha = 1/7500$, $f_c = 320$ MPa.
4) Use of non-programmable calculator is allowed.
5) Assume additional data and draw sketches wherever necessary. and specify the same.

Q1) **Attempt any four** (20M)

i. Write the procedure along with the sketches of apparatus for finding out specific gravity of a soil in lab.

ii. Differentiate between Long and Short colum, give practical examples.

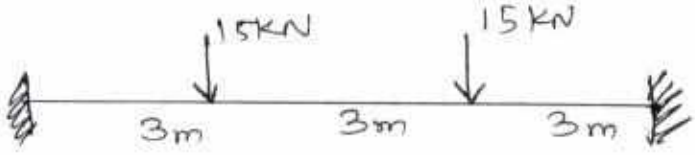
iii. State assumptions and limitations of Euler's Column Theory.

iv. Define Porosity, Void Ratio, Plastic Limit, Liquid Limit and Soil Bearing Capacity.

v. State the different properties of soil which can be use for a building.

Q2) a) What are Fixed beams, state its advantages and disadvantages. (5M)

b) Solve the following fixed beam and draw its SFD & BMD. (15M)



Q3) A column size 3.3 m with hollow circular section of dia 100 mm and thickness 10 mm with one end fixed and other end hinged allowing factor of safety as 3. Find the safe load it can carry with Euler's method as well as Rankine's method. Also find their ratio. (15M)

Q4) Explain in detail any three cases of loading with fixed beam. (15M)

S.Y.B.ARCH, Sem-4, APRIL 2019

SUBJECT: Arch. Building Services — Duration: 2 hours

TOTAL MARKS: 50 — Date: 22/04/2019

Notes:

- Question 1 is compulsory
- Solve any 3 questions from remaining.
- Numbers on the right hand side indicate marks.

Q 1. Design a septic tank and soak pit for a building with total no. of 60 residents and draw the sketches of the same.
(Assume Retention Time: 20 hrs. and absorption rate of soil: 1350 liters / day) (20)

Q 2. Sketch and explain the process of rainwater harvesting for premises in urban areas. (10)

Q 3. Write short notes on following (any two). (10)

a. Soak Pit
b. Inspection Chamber
c. First flush pipe
d. Grease Trap

Q4. Write short notes on: (Any two) (10)

a. Oil and Grease Trap
b. Rain water harvesting calculation
c. Sewer Appurtenances

Q5. Sketch and explain any three sewer appurtenances used in storm-water drainage system. (10)

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B.ARCH. SECOND YEAR- SEMESTER IV (APRIL 2019 EXAM)

SUBJECT: Humanities — Duration: 2 hours

TOTAL MARKS: 50 — Date: 16/04/2019

Notes:

- All questions are compulsory.
- Numbers on the right hand side indicate marks for each question.
- Support all answers with neat sketches.

Q1. Describe in detail Kandhariya Mahadev temple & Khajuraho temple complex . Elaborate on components of temples. (10 M)

Q.2. Sketch the illustration from the book Hindu & Buddhist Architecture by Satish Grover. (10 M)

Q.3 . Explain & elaborate on any one. (10 M)

- Vijayanagara Empire.
- Sanchi Complex.
- Qutub Minar Complex.
- Fatehpur Sikri.
- Shahjahanabad
- Amer Fort Palace & Hawa Mahal
- Gol Gumbaz Complex
- Temple Town Of Madurai
- Temple Town Of Benaras

Q.4. Explain & elaborate on any five.

a. Bhaja Caves. (4 M)
b. Kath-Kuni style of architecture (4 M)
c. Sun temple of Modhera (4 M)
d. sultanates & empire of Delhi. (4 M)
e. Six sacred world religions . (4 M)
f. Hellenistic Influence in India. (4 M)