

Total No. of Printed Pages:1

**SUBJECT CODE NO:- H-605**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y.Arch. (CBCS)**  
**Building Materials – II**

**[Time: Two Hours]**

**[Max.Marks:40]**

Please check whether you have got the right question paper.

- N.B
- 1) Solve any Four questions.
  - 2) Draw neat sketches to elaborate your answers.
  - 3) All questions carry equal marks.
- Q.1 Give a note on cement as a major building construction material in today's context. 10
- Q.2 Write a note on curing of Plain Cement Concrete and explain in detail the methods adopted. 10
- Q.3 Explain different types of light weight concrete. 10
- Q.4 Write a note on Indian Patent Stone (IPS) 10
- Q.5 Give a note on roofing materials used for industrial building construction. 10
- Q.6 Explain different styles of pointing which are commonly used on external facades of building. 10

Total No. of Printed Pages:3

**SUBJECT CODE NO:- H-608**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y.Arch.**  
**T.D.S. I**  
**(OLD)**

[Time: Three Hours]

[Max.Marks:100]

N.B

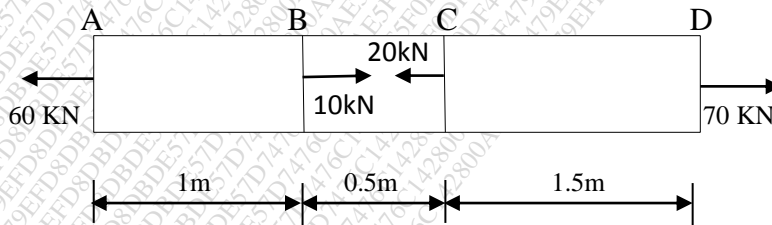
Please check whether you have got the right question paper.

- i) No supplements will be provided.
- ii) Do not write anything on question paper.
- iii) Question No.1 is compulsory.
- iv) Out of remaining questions, Solve any five.
- v) Assume suitable data, if necessary.

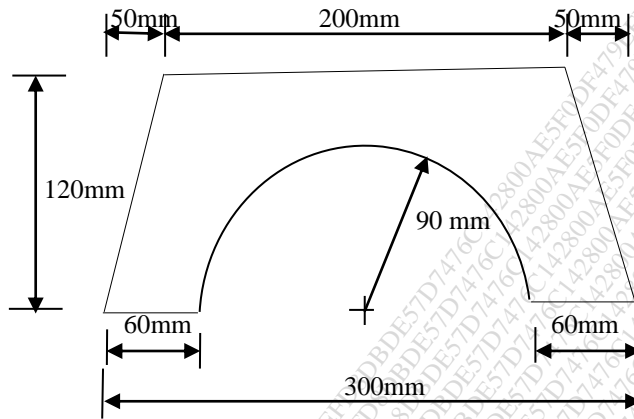
- Q.1(a) A mild steel specimen was tested in tension and following results were obtained. 16
- i) Diameter of the Specimen=25mm
  - ii) Length of the specimen= 0.2m
  - iii) Extension under load of 15 KN=0.042 mm
  - iv) Load at Yield point = 92 KN
  - v) Maximum load = 150 KN
  - vi) Length of the specimen after fracture = 0.287m
  - vii) Diameter at the neck = 15.7 mm

Calculate

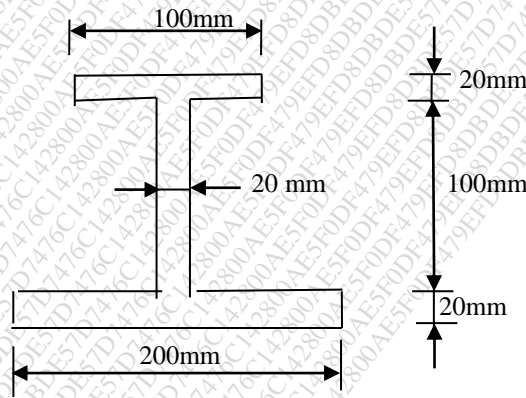
- (a) Young's Modulus b) Ultimate Stress
  - (c) Percentage elongation d) Working stress if factor of safety is 1.5
- (b) A steel bar having a cross-sectional area of  $600 \text{ mm}^2$  is subjected to axial forces as shown in the following figure. Find the total change in length of the bar. Take  $E= 2.1 \times 10^5 \text{ N/mm}^2$  09



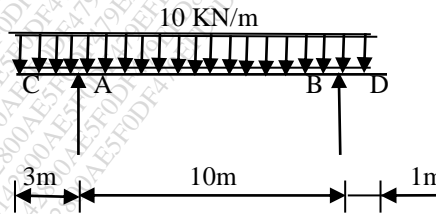
Q.2 Determine the centroid of the following section. 15



Q.3 Find the moment of inertia about its horizontal axis passing through centre of gravity of the section. 15



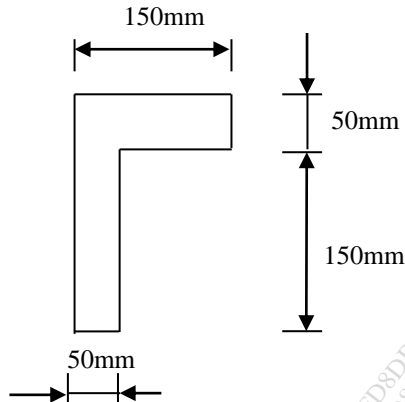
Q.4 Draw shear force and bending moment diagrams for the following beam 15



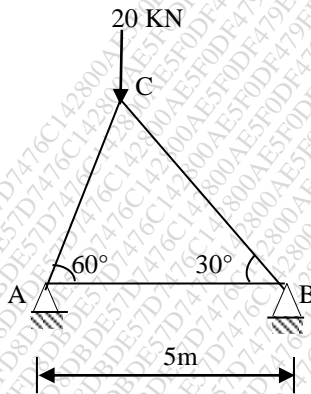
Q.5 Write short notes on any three of the following 15

- Hooke's law, stress strain curve and Elastic Modulus
- Parallel axis theorem.
- Assumptions in theory of pure bending
- Explain moment of resistance

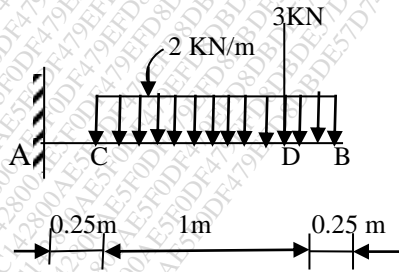
Q.6 A beam with T section as shown carries a uniformly distributed load of 40 kN/m over a span of 10m. Calculate the maximum stresses produced due to bending. 15



Q.7 Determine the forces in all members of the frame as shown in the following figure 15



Q.8 Draw shear Force and bending moment diagrams for the following beam 15



Total No. of Printed Pages:1

**SUBJECT CODE NO: H-615**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch.**  
**DFA-II**  
**(REVISED)**

[Time: Three Hours]

[Max.Marks:100]

Please check whether you have got the right question paper.

- N.B
- i) Question No.1 from section A and Question No 5 from section B are compulsory. Out of the remaining three questions from each section, Solve any two.
  - ii) Answer to the two sections must be solved on same answer book.
  - iii) Wherever necessary, support answer with neat sketches.

**Section A**

- Q.1 a) “Spaces are created efficiently for human activities by the pioneers of architecture”. Justify the sentence. 14  
 b) Write a note on types of entrances. 10
- Q.2 Describe the different types of circular patterns. 13
- Q.3 Access to buildings is important from the point of view of aesthetics and the scale of mass from the point of approach. 13
- Q.4 What are the different factors that contribute for the building and site relationship? 13

**Section B**

- Q.5 a) What are the factors to be considered while designing buildings in cold climates? Describe the method of construction, the materials to be used and structural aspects. 14  
 b) Quote from history, the impact of culture from different civilisation on the built environment. 10
- Q.6 Describe how flooding of new brand of materials and latest construction technologies affects the aesthetics of a built environment. 13
- Q.7 Explain how human values are the integral part of culture and they are reflected in architecture. 13
- Q.8 Modern construction techniques and structural concept influence the built form. Justify it. 13

Total No. of Printed Pages:01

**SUBJECT CODE NO:- H-622**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**

**F. Y. Arch.**  
**H. A. - I**  
**(REVISED)**

[Time: Three Hours]

[Max.Marks: 100]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 is compulsory.
  - ii) Solve any FIVE questions out of the remaining questions.
  - iii) Draw neat sketches wherever necessary.
- Q.1 Draw sketches only (any four) 20
- a) Stupa at sanchi
  - b) Virupaksha temple, pattadakal
  - c) Durga temple, Aihole
  - d) Kailashnath temple, kanchipuram.
  - e) Khandaria mahadev temple, khajuraho
- Q.2 Write a detail note on” concept of god” and evolution of temple form, rituals symbolism and social importance of temples in India. 16
- Q.3 Explain with neat sketches Architecture and Town planning in indus valley civilization. 16
- Q.4 Draw neat plan and explain rock cut architecture at ellora, Aurangabad. 16
- Q.5 Draw neat sketch and explain temple town at shrirangam or Madurai 16
- Q.6 Explain different styles of temples architecture evolved in India. Explain their important features with suitable example of each style. 16
- Q.7 Write short notes on any four:- 16
- a) Buddhist “Torana”
  - b) Typical “Vihara”
  - c) Early chalukyan temples
  - d) Khajuraho temples
  - e) Ashokan School of architecture.

Total No. of Printed Pages:1

**SUBJECT CODE NO:- H-627**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch.**  
**A.B.C.M. I**  
**(REVISED)**

**[Time: Four Hours]****[Max.Marks:100]**

Please check whether you have got the right question paper.

- N.B
1. Solve any two questions from section A and three questions from section B
  2. Use drawing sheet for section A and answer sheet for section B
  3. Assume suitable data wherever necessary.
  4. Use sketches wherever necessary. To be solved on answer sheet.

## Section A

- Q.1 Draw neat sketches of the following in English bond.
- a) Two consecutive courses of right angled corner of one and a half brick thick wall. 15
  - b) Two consecutive courses of junction of one and half brick wall with two brick thick wall. 20
- Q.2 A compound wall is to be constricted in random rubble uncoursed masonry. The depth of the wall foundation is 0.60m below the ground lvl. and height is 1.5m and thickness of wall 440 above ground level. Draw section of the wall showing foundation. Details and elevation of wall upto its full height. ( scale 1:20) 35
- Q.3 Draw the entire detail section of the building showing all structural components from foundation to parapet wall in suitable scale. 35

## Section B

- Q.4 Write an essay on Mud as a building material. 10
- Q.5 Explain in detail defects in timber. 10
- Q.6 What do you understand by natural seasoning and Artificial seasoning? 10
- Q.7 Explain the process of preparation of clay for manufacturing of bricks. 10

Total No. of Printed Pages:2

**SUBJECT CODE NO:- H-628**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch.**  
**A.B.C. I (CBCS)**

**[Time: Four Hours]****[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
1. Solve any two questions from sec. A and any two from Sec. B
  2. Answers to Sec A must be solved on drawing sheets only answers to Sec B can be solve on answers sheets.
  3. Assume suitable data wherever necessary.
  4. Figures to the right indicate full marks.
- Section A**
- Q.1 a) Draw two brick thick isolated column in double Flemish Bond. The height can be taken at 1.50M above ground level. 05
- i) Draw plan of at least 3 successive courses. 03
  - ii) Draw isometric view (scale 1:10)
- b) Draw plan elevation and isometric view of a 1 ½ brick wall at a right angle junction in single Flemish bond. 09
- i) Plan of at least 3 successive courses 04
  - ii) Elevation 09
  - iii) Isometric view of 3 successive courses showing top surface of each course (scale 1:10) 09
- Q.2 A room with internal dimensions of 4.50m X 3.60 mts. have r.c.c columns at all four corners. The column are 230 mm X 380mm. The footing size 1200mm X1200mm. The walls are 230mm brick walls. The roof will be of R.C.C slab. The hard strata is available at 1500mm. below gr. Level and height of plinth is 600mm. above gr. Level. 30
- i) Draw plan of column with footing showing general arrangement of reinforcement in column.
  - ii) Draw detail section of the column with footing up to plinth level showing general arrangement of reinforcement in column footing 2 position of plinth beam.(scale 1:10)
- Q.3 Draw neat sketches of any four 30
- i) Draw elevation 2 section of a lirtel with 2 nos. I sections encased in concrete.
  - ii) Segmental Arch. In Ashlar stone
  - iii) Elevation 2 cross section of random 24bble stone masonry built to courses.
  - iv) Mortise & Tenon joint.
  - v) Tongue & grooved joint.



Section B

- Q.4 Draw natural bed of stone and its function in stone masonry. In an arch what will be the position of 10 natural beds.
- Q.5 What are the requirement of constructing a half brick thick wall and what should be proportion of 10 cement mortar.
- Q.6 What is the proportion of cement concrete for reinforced cement concrete (M.20) what is the 10 method of mixing concrete.

Total No. of Printed Pages:1

**SUBJECT CODE NO:- H-632**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch.**  
**D.F.A.- I**  
**(REVISED)**

**[Time: Three Hours]**

**[Max.Marks: 100]**

Please check whether you have got the right question paper.

- N.B
1. Q.No.1 and Q.No.2 are compulsory.
  2. Out of remaining attempt any six questions.
  3. Assume suitable data if necessary.
- 
- |     |  |    |
|-----|--|----|
| Q.1 | Explain in detail elements & principles of design with suitable sketches.  | 20 |
| Q.2 | What do you mean by visual perception and explain its principles with suitable examples.                             | 20 |
| Q.3 | How do you compare the work of an Architect with that of artist, sculptor and technologist?                          | 10 |
| Q.4 | What do you mean by seven lamps of architecture? Explain each lamp in detail with the help of examples from history. | 10 |
| Q.5 | Write short notes on visual and temporal art.  | 10 |
| Q.6 | How the fenestration patterns enhance the aesthetics of building?  | 10 |
| Q.7 | What is mass and space relationship? Explain it in detail.   | 10 |
| Q.8 | Write note on spatial organization of spaces.  | 10 |
| Q.9 | What is difference between technology & science?   | 10 |

Total No. of Printed Pages:1

**SUBJECT CODE NO:- H-633**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch. (CBCS)**  
**Building Material**

[Time: Two Hours]

[Max.Marks:40]

Please check whether you have got the right question paper.

- N.B
1. Solve any four questions.
  2. Draw neat sketches to elaborate your answers.
  3. All questions carry equal marks.
- 
- |     |  |    |
|-----|--|----|
| Q.1 | Write an essay on Mud as a building material.  | 10 |
| Q.2 | What are properties of good sand? What is the function of sand in mortar?  | 10 |
| Q.3 | What are the qualities of good bricks? What are the different tests conducted on bricks to find there suitability for construction work? | 10 |
| Q.4 | Differentiate between Rubble and Ashlar masonry with neat sketches.  | 10 |
| Q.5 | What do you understand by Natural seasoning and Artificial seasoning?  | 10 |
| Q.6 | Explain the advantages of timber construction.   | 10 |

Total No. of Printed Pages:1

**SUBJECT CODE NO: H-637**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y. ARCH.**  
**E.C.A.C.A.**  
**(REVISED)**

[Time: Three Hours]

[Max.Marks: 100]

Please check whether you have got the right question paper.

- N.B
- i) Answer to the two sections must be written on the same answer book
  - ii) Q.1 from section A and Q.5 from section B are compulsory
  - iii) Attempt any two questions out of the remaining of each section

**Section A**

- Q.1 Write short notes with neat sketch (Any four) 24
- a) Ionic column order
  - b) Prehistoric shelters
  - c) Typical mastabas
  - d) Sargon palace
  - e) Ziggurat of ur
  - f) Temple of Abu simbel
- Q.2 Write in detail about the development shelters, culture and lifestyle in prehistoric times 13
- Q.3 Describe with sketches the development of pyramids from mastabas. Draw neat sketch of the royal pyramid in section 13
- Q.4 Describe in detail about River valley civilization at Mesopotamia. Write in detail about the evolution of its city states and their character 13

**Section B**

- Q.5 Write short notes with neat sketch (Any four) 24
- a) Mortuary and cult temples
  - b) Acropolis
  - c) Greek stadium
  - d) Circus maximus, Rome
  - e) Stoas
  - f) Palace of persipolis
- Q.6 Greeks were artisians and Romans were engineers. Explain with respect to architectural characteristics of 13 both civilizations
- Q.7 Write a detailed note on Greek column orders and illustrate with suitable examples 13
- Q.8 Elaborate the importance of public buildings in Roman city planning. Explain any one building in detail. 13

Total No. of Printed Pages:2

**SUBJECT CODE NO:- H-647**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch.**  
**E.S. (CBCS)**

**[Time: Three Hours]****[Max.Marks: 80]**

Please check whether you have got the right question paper.

- N.B
1. Q.1<sup>st</sup> from section A and Q.5<sup>th</sup> from section B are compulsory. Each one of 10 marks.
  2. Attempt any two questions from section A and two from section B. Each one of 15 marks.
  3. Illustrate your answers wherever necessary.

**Section A**

Q.1 Multiple choice type questions. (select the correct option to the followings)

10

- 1) Ozone layer is being destroyed by:
  - a)  $SO_2$
  - b) Photochemical oxidants
  - c) CFC
  - d) Smog
- 2) The atmosphere of big cities is polluted most by
  - a) House hold waste
  - b) Radioactive fallout
  - c) Automobile exhausts
  - d) Pesticides
- 3) Which of the following is not a 'greenhouse gas'
  - a) Oxygen
  - b) Carbon dioxide
  - c) CFC
  - d)  $CH_4$
- 4) Population explosion has occurred in the last:
  - a) 500 years
  - b) 300 years
  - c) 150 years
  - d) 700 years
- 5) Kaziranga National Park is famous for:
  - a) Tiger
  - b) Musk deer
  - c) Elephant
  - d) Rhinoceros

- Q.2 Describe various renewable sources of energy. 15
- Q.3 What are the main objective use of Red Lists? 15
- Q.4 What are the harmful effects of water pollutions? 15

**Section B**

- Q.5 Mark the statement True (T) or False (F) 10
- 1) Human population is increased five folds during the last 150 years.
  - 2) The net immigration is always positive.
  - 3) The government of India introduced the Family Planning Programme in 1951.
  - 4) Word Environment Day on 5<sup>th</sup> June.
  - 5) Dysentery spread due to water pollution.
- Q.6 Describe the effect of environment on human health. 15
- Q.7 What are the urban problems related to energy? 15
- Q.8 Write notes on any three of the following 15
- a) Species diversity
  - b) Structure of Ecosystem
  - c) Disaster management
  - d) Global warming
  - e) HIV

Total No. of Printed Pages:1

**SUBJECT CODE NO:- H-643**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y. ARCH (CBCS)**  
**E.C.A.C.A.**

[Time: Three Hours]

[Max.Marks: 80]

Please check whether you have got the right question paper.

N.B

i) All questions are compulsory

Q.1 Answer the following (any two)

40

- i. Describe with sketches the development of pyramids from Mastabas. Draw neat sketch of the Royal Pyramid in section.
- ii. Write a detailed note on Roman column orders and illustrate with suitable examples.
- iii. Explain in detail the Town Planning Principles of Greeks and also the important elements of Greek City Plans.

Q.2 Explain the following with appropriate sketches (Any four)

40

- i. Greek column orders
- ii. Sphinxes and Obelisks
- iii. Agora and Stoas
- iv. Roman city planning
- v. The Pyramids of Giza

Total No. of Printed Pages:1

**SUBJECT CODE NO: H-642**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y. ARCH**  
**E.S.**  
**(REVISED)**

[Time: Three Hours]

[Max.Marks: 100]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 from section A and Q.No.5 from section B are compulsory.
  - ii) Solve any two questions form remaining from each section
  - iii) Use sketches whenever necessary
  - iv) Answers to the two sections must be written separately

**Section A**

- Q.1 a) Explain in brief how overexploitation of forest is taking place  
Describe the concept of 'Deforestation' 11
- b) Write short notes on following (any three) 15
- i) Ex-situ conservation
  - ii) Biotic components of ecosystem
  - iii) Water conservation
  - iv) Deforestation
- Q.2 Explain in detail term 'Global Warming'. 12
- Q.3 Write an account on equitable use of resources for sustainable life style? 12
- Q.4 Explain the importance of natural Resources. What do you understand by renewable energy sources? 12

**Section B**

- Q.5 a) Explain the process involve in the conservation of environment 11
- b) Write short notes on following (any three) 15
- i) Environment protection Act
  - ii) The water cycle
  - iii) Renewable sources of energy
  - iv) Species diversity
- Q.6 Write an essay on environment and human health 12
- Q.7 Justify the terms 'Hotshot of Biodiversity'. 12
- Q.8 What do you understand by environment degradation? Describe in detail the causes and control measures of 'Air pollution' 12



Total No. of Printed Pages:1

**SUBJECT CODE NO:- H-638**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y. ARCH. (CBCS)**  
**D.F.A. I**

**[Time: Three Hours]****[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B

- 1) Solve any two questions from section A.
- 2) Solve any four questions from section B.
- 3) Draw suitable sketches wherever required.

**Section A**

- Q.1 Explain in detail elements & principles of design with suitable sketches. 20
- Q.2 What do you mean by visual perception and explain its principles with suitable examples? 20
- Q.3 What is scope of architecture and role of an Architect? 20

**Section B**

- Q.4 What is golden ratio and where do you find in nature? 10
- Q.5 What do you mean by seven lamps of architecture? Explain each lamp in detail with the help of examples from history. 10
- Q.6 What are forms in architecture and give its transformation? 10
- Q.7 What are ordering principles in architecture? 10
- Q.8 What is difference between technology & science? 10

Total No. of Printed Pages:01

**SUBJECT CODE NO: H-613**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch (CBCS)**  
**Design Fundamentals in Architecture-II**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Solve any two questions from section A.
  - ii) Solve any four questions from section B.
  - iii) Draw suitable sketches wherever required.

**SECTION – A**

- Q.1 How does impact of climate affects building design? 20
- Q.2 Discuss “Construction techniques responsible for the development of form & aesthetics of building”. 20
- Q.3 What do you mean by Circulation? Explain its elements and types? 20

**SECTION – B**

- Q.4 Define form and function. Describe their relationship by quoting examples from nature and manmade 10  
objects.
- Q.5 What is role of an architect in performing activities efficiently? 10
- Q.6 Write short notes: 10
- Thermal confort
  - Building & site relationship
- Q.7 What are different styles of architecture and trends in architecture? 10
- Q.8 List different building material & structural systems which affects building form & aesthetics. 10

Total No. of Printed Pages:02

**SUBJECT CODE NO:- H-616**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch. (CBCS)**  
**History of Architecture-I**

**[Time: Three Hours]****[Max. Marks: 80]**

- N.B Please check whether you have got the right question paper.
- i) Question no.1 & 6 are compulsory .
  - ii) Attempt any three questions from the remaining , from each section.
  - iii) Elaborate with sketches ,whenever necessary.
  - iv) Section A & B are off 40marks each & are to be written separately.

**Section A**

Q.1 Write the correct answers.

- |      |  |    |
|------|--|----|
| I.   | Town planning of Indus-valley civilization was having roads running-----   | 02 |
|      | <ol style="list-style-type: none"> <li>a. North-east &amp; south –west</li> <li>b. North-south &amp; East-west</li> <li>c. Parallel to each other</li> </ol> |    |
| II.  | The main building material of Indus-Valley civilization was-----   | 02 |
|      | <ol style="list-style-type: none"> <li>a. Stone</li> <li>b. Timber</li> <li>c. Bricks</li> </ol>   |    |
| III. | Initially Vedic period was referred as -----period.  | 02 |
|      | <ol style="list-style-type: none"> <li>a. Jainism</li> <li>b. Brahminical</li> <li>c. Buddhism.</li> </ol>   |    |
| IV.  | The evolution of arch shaped opening from Vedic structures, which became a characteristic feature of Buddhism architecture is known as -----                 | 02 |
|      | <ol style="list-style-type: none"> <li>a. Vault</li> <li>b. Torana</li> <li>c. Chaitya Arch</li> </ol>   |    |
| V.   | The Buddhist ‘Viharas’ are arranged around -----   | 02 |
|      | <ol style="list-style-type: none"> <li>a. Chaitya hall</li> <li>b. Well</li> <li>c. Open court</li> </ol>  |    |
| Q.2  | a) Describe the town planning features of Indus-Valley civilization.   | 06 |
|      | b) Sketch a typical residence from Indus-valley cities.(PLAN)  | 04 |

- Q.3 Explain the architectural features & elements of Vedic period & it's significance in Buddhist architecture. 10
- Q.4 Write notes with sketches. (Any two) 10
- I. Lomas –Rishi cave
  - II. Sun window of Chaitya hall
  - III. ‘Viharas’
- Q.5 Write a note on Buddhist Monastery with sketches. 10
- Section B**
- Q.6 Choose correct answer or write in short. 10
- i. Write the names of three temples styles in India. 03
  - ii. The ‘kailasa’ temple at Ellora is of \_\_\_\_\_ 02
    - a. Indo Aryan style
    - b. Dravidian style
  - iii. Write the three main parts of Hindu temple. 03
  - iv. The ‘Shikhara’ of Indo-Aryan style consist of \_\_\_\_\_ 02
    - a. Amalaka
    - b. Oblong shape feature
    - c. Octagonal pyramid
- Q.7 Write a note on ‘Shore temple’ with sketches of plan & elevation. 10
- Q.8 Describe in detail ‘Kandariya mahadeo’ temple with sketches 10
- Q.9 Write notes on – 10
- I. Interior of Khajuraha temples
  - II. Typical characteristics of ‘Gujarat’ temple style.
- Q.10 Describe with sketches the salient features of Dravidian style under Pandyas. 10

Total No. of Printed Pages:06

**SUBJECT CODE NO: H-609**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F. Y. Arch (CBCS)**  
**Theory and Design of Structure-I**

[Time: Three Hours]

[Max.Marks:80]

- N.B Please check whether you have got the right question paper.
- i) Question No. 1 and No. 6 are compulsory.
  - ii) Out of remaining questions, please solve any two questions from each section.
  - iii) Assume suitable data, if necessary.

**SECTION - A**

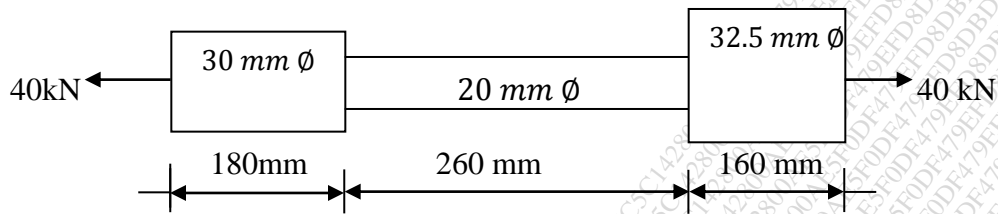
Q.1 Multiple choice questions.

10

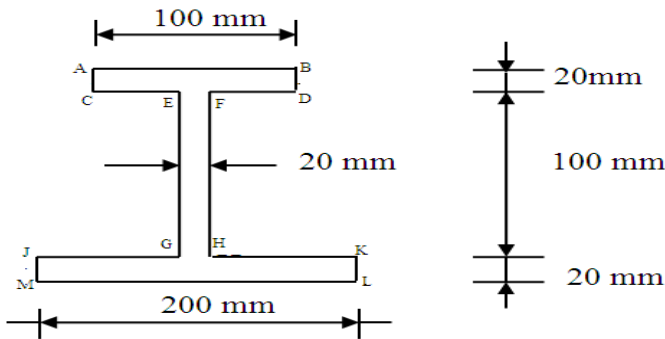
1. If a force acts on a body, it sets up some resistance to the deformation. This resistance is known as
  - a) Stress
  - b) Strain
  - c) Elasticity
  - d) Modulus of elasticity
2. Deformation per unit length is called as
  - a) Stress
  - b) Strain
  - c) Elasticity
  - d) Young's Modulus
3. Modulus of elasticity is the ratio of
  - a) Stress to strain
  - b) Strain to stress
  - c) Deformation to original length
  - d) Force to unit area
4. A composite section contains three different material. The stresses in all the different materials will be
  - a) Equal
  - b) Different
  - c) Zero
  - d) In the ratio of areas
5. The centre of gravity of an equilateral triangle of side (a) is \_\_\_\_\_ from any of the three sides.
  - a)  $\frac{a\sqrt{3}}{2}$
  - b)  $\frac{a\sqrt{2}}{3}$
  - c)  $\frac{a}{2\sqrt{3}}$
  - d)  $\frac{a}{3\sqrt{2}}$

6. The centre of gravity of hemisphere lies at a distance of \_\_\_\_\_ from its base measured along its vertical radius.
- a)  $\frac{3r}{8}$    b)  $\frac{3}{8r}$    c)  $\frac{8r}{3}$    d)  $\frac{8}{3r}$
7. The unit of the moment of inertia is expressed in
- a)  $mm^2$   
b)  $mm^3$   
c)  $mm^4$   
d)  $mm^5$
8. The bending moment at the free end of cantilever beam carrying any type of load is
- a) Minimum  
b) Maximum  
c) Zero  
d) Equal to the load
9. If a cantilever beam is subjected to a point load at its free end, then the shear force under the point load is
- a) Minimum  
b) Maximum  
c) Zero  
d) Equal to the load
10. When shear force at a point is zero, then bending moment at that point will be
- a) Minimum  
b) Maximum  
c) Zero  
d) Equal to the load

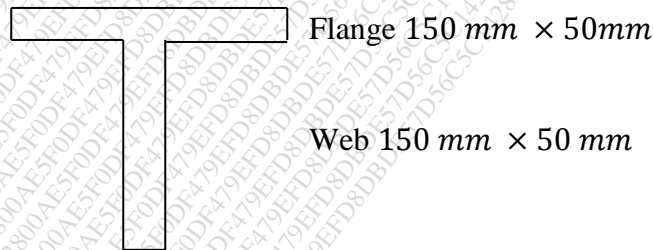
Q.2 A bar consists of three lengths as shown in figure. Find the stresses in three parts and total extension 15  
of the bar an axial pull of 40 kN. Take  $E = 2 \times 10^5 \text{ N/mm}^2$



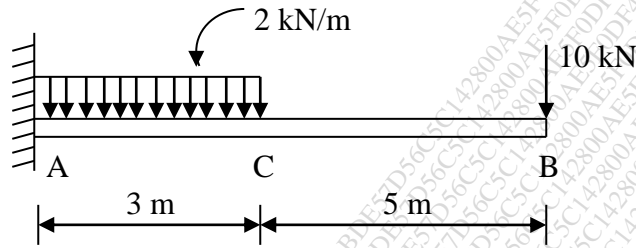
Q.3 Find the centroid of the lamina as shown in figure. 15



Q.4 Find the moment of inertia of T section about XX axis through its centroid. 15



Q.5 Draw shear force and bending moment diagrams for the Cantilever beam as shown. 15



**SECTION – B**

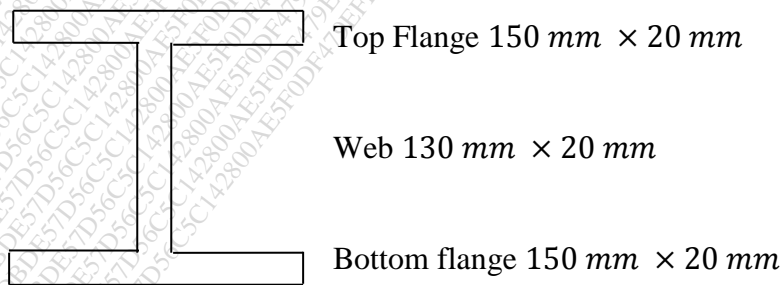
Q.6 Multiple choice questions. 10

1. A point of contra flexure is a point where
  - a) Shear force changes sign
  - b) Bending moment changes sign
  - c) Shear force is maximum
  - d) Bending moment is maximum
2. Roller support is capable of taking load only in \_\_\_\_\_ direction to that of rollers.
  - a) Perpendicular
  - b) Parallel
  - c) Across
  - d) None of the above
3. A continuous beam has more than \_\_\_\_\_ supports.
  - a) 1
  - b) 2
  - c) 3
  - d) Many
4. A cantilever beam has only one support this statement is
  - a) True
  - b) False
  - c) Neither true nor false
  - d) None of the above
5. In a cantilever truss, it is very essential to find out \_\_\_\_\_ before analysing it.
  - a) Members
  - b) Reaction
  - c) Joints
  - d) Applied load

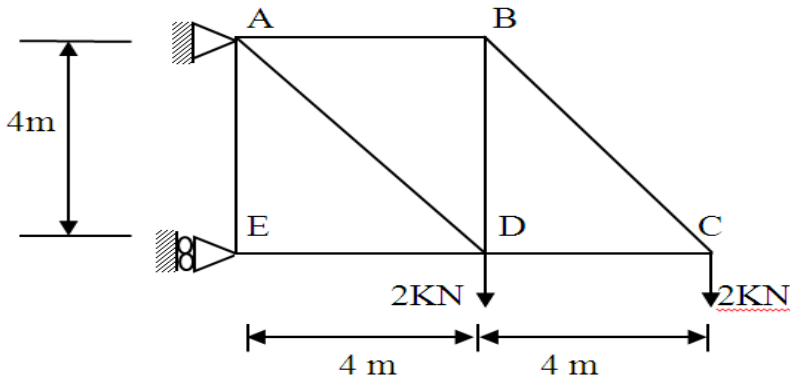


6. The section modulus of a rectangular section having width (b) and depth (d) is
  - a)  $\frac{bd}{6}$
  - b)  $\frac{b^2d}{6}$
  - c)  $\frac{bd^2}{6}$
  - d)  $\frac{b^2d^2}{6}$
  
7. In the equation  $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$ , I stands for
  - a) Bending moment
  - b) Stress
  - c) Moment of inertia
  - d) Strain
  
8. A triangle shape frame is always a perfect frame This statement is
  - a) True
  - b) False
  - c) Neither true nor false
  - d) None of the above
  
9. At neutral axis of a section, bending stress is zero. This statement is
  - a) True
  - b) False
  - c) Neither true nor false
  - d) None of the above
  
10. In perfect frame, the number of members is equal to \_\_\_\_\_ where (j) is number of joints.
  - a)  $(3 - 2j)$
  - b)  $(3j - 2)$
  - c)  $(2j - 3)$
  - d)  $(2 - 3j)$

Q.7 A beam of I section as shown carries a u.d.l. of 30 kN/m on a span of 10m. calculate the maximum bending stresses produced due to bending. 15



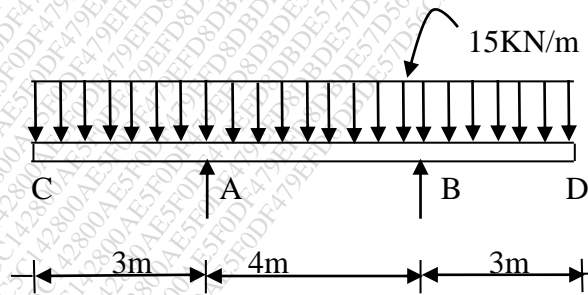
Q.8 Determine the forces in the members BC, CD and ED of the truss as shown in figure. 15



Q.9 Answer the following questions. 15

- Explain parallel axis theorem.
- What are different types of Beams?
- Explain Hooke's law.

Q.10 Draw shear force and bending moment diagrams for the following beam. 15



Total No. of Printed Pages:2

**SUBJECT CODE NO:- H-602**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**F.Y.Arch. (CBCS)**  
**Architectural Building Construction-II**

[Time: Four Hours]

[Max.Marks: 80]

Please check whether you have got the right question paper.

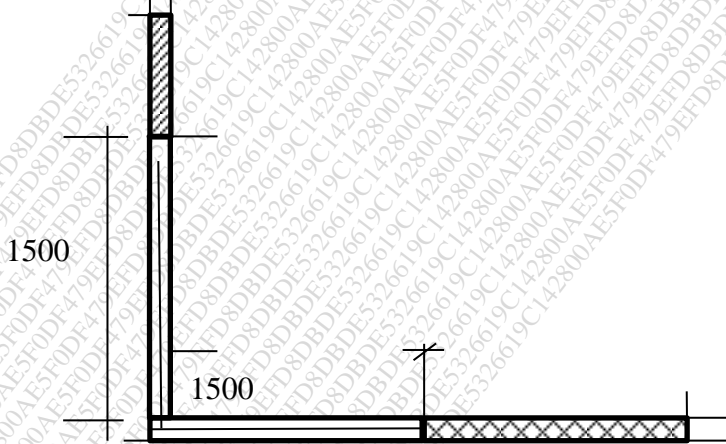
- N.B
1. Solve any two questions from section A and solve two questions from section B
  2. Answers to section A must be solved on drawing sheets only. Answers to section B can be solved on answer sheets.
  3. Figures to the right indicates full marks.
  4. Assume suitable data wherever necessary

Section A

Q.1 A fully glazed teak wood corner window is to be provided for a living room of a bungalow. The dimensions of the living room are 3.70M X 5.00M. the dimensions are of the window are 1500mm. on either side of the corner posts of the window. A r.c.c. chajja is provided on the window as a weather shed & is 600mm. in width the window is fixed 900mm above the floor level. The height of the window is 1200mm the height of the living room is 3.35M at the top of the slab from the floor level the height of plinth is 600mm above the ground level. The width of each t.w shutter should not exceed 450mm the size of window frame is 75mm X 100mm the candidates can use a combination of operable shutters and fixed glass.

10

A) Draw plan , elevation and cross section of the corner window ( scale 1:10)



plan of corner window (not to scale)

- B) Draw large scale details of
- i) The joint between the corner post and window sills 7<sup>1/2</sup>
  - ii) Joint between glazing bar and style of the shutter. 7<sup>1/2</sup>
  - iii) Fixing of glass with the glazing bar 05
- (choose appropriate scale)  
All dimensions of each member of the window must be mentioned.

- Q.2 A hall 9.60M X 6.00M is to be provided with Mangalore tile roof with t.w boarding, supported by a king post Roof truss. The height below the tie beam of the roof truss is 4.50mts from the top of the floor the hall is a load bearing structure with 1 ½ bk walls T.w windows have been provided along the length of the wall the height of the plinth is 750mm above the ground level.
- A) Draw plan cross section and elevation of the hall ( scale 1:25) 10
  - B) Draw large scale details of
    - i) Detail at the junction of the roof truss and the supporting wall 07
    - ii) Joint between the tie beam and the principle rafter of the truss. 07
    - iii) Joint at the junction of king post t.w.strut and the tie beam 06

(choose appropriate scale)
- Q.3 Draw neat sketches of any four 30
- a) A fully glazed t.w. louvered window ( section & elevation)
  - b) A vertically sliding t.w glazed window
  - c) Joint between the tie beam and common rafter ( spar) of a close couple roof.
  - d) Sliding mechanism at the top and bottom of a sliding door
  - e) Joint at the junction of queen post principle Rafter and straining beam .

SECTION B

- Q.4 Describe the method of supporting the brick masonry above the corner window (refer to Q.no.1) and details of casting of r.c.c beams & chajja. 10
- Q.5 What is the function of a t.w purlin in a king post roof truss and state its importance. 10
- Q.6 Describe the fixing method of t.w wall plates to the wall & method of fixing common rafter to the wall plate 10
- Q.7 Describe the method of fixing of Mangalore tiles as a roofing material for a Queen post roof truss. 10

# Code No: H – 601 – 2018

FACULTY OF SCIENCE & TECHNOLOGY

F.Y. Architecture (Rev.) Examination

MAY/JUNE, 2018

## Architectural Building Construction & Materials – II

Time: Four Hours

Max. Marks: 100

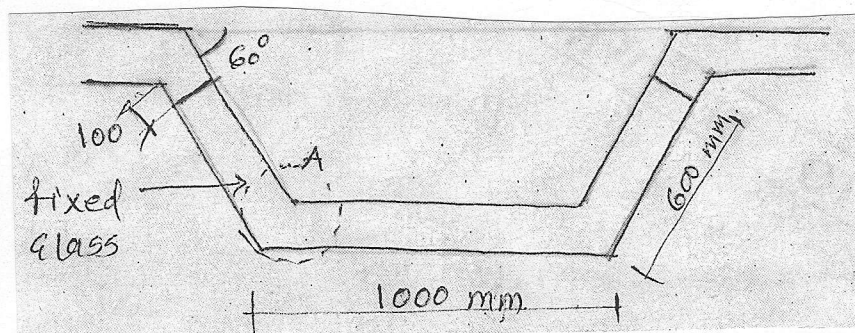
“Please check whether you have got the right the question paper”

- N.B.
- Answer any two questions from Section A and any three from Section-B.
  - Section A must be solve on drawing sheets only. Answer to section B. May to solved on answer sheets.
  - Assume suitable data wherever necessary and mention it clearly.
  - Figures to the right indicates full marks.

### SECTION – A

- Q. 1 A room 8.0 mt x 6.5 mt is to be provided with a pitched roof. The height of the room below the bottom of wall plate to the top of floor is 4.5 mt. The walls are one and half bk. the wall. Roof covering is Manglore tiles on T.W. boardings.
- Draw plan (1:50) and elevation (1:20) 11
  - Draw large scale details of :
    - Joint between king post and tie beam 06
    - Joint at ridge 06
    - Fixing of roofing material. 06
    - Joint between principle rafter and wall plate. 06
- Q.2 Draw neat details to suitable scale for any three of the following : 35
- Load transfer in Arches.
  - Draw neat and proportionate sketches with names of any five types of hardware used in timber door.
  - Different types and lintels.
  - Fixing of AC sheets.

Q.3



35

Design a Bay window with a given sketch with wall thick – 350 mm  
The central portion of a window is having two openable shutters and other two slanting sides have fixes glass.

- Take the frame size 75mm x 50mm
- Size of a style – 30 x 65 mm
- Take the height of a window 1.2 mt and fixed @900mm above floor level.

...2.

# Code No: H – 601 – 2018

-2-

Drawing requirements :

- (i) Draw plan, elevation and section [Scale 1:10]
- (ii) Draw enlarged details at :
  - (a) Detail of meeting style
  - (b) Corner post of sill members  
[shown in sketch at 'A']
  - (c) fixing of fixed glass and openable shutter at corner post.

## SECTION –B

- |     |  |    |
|-----|--|----|
| Q.4 | Describe the method of laying Indian patent stone flooring.  | 10 |
| Q.5 | Describe the good qualities of concrete.   | 10 |
| Q.6 | State your choice of flooring for the following and why? <ul style="list-style-type: none"><li>(a) Atrium of a five start hotel</li><li>(b) Courtyard of a house</li><li>(c) Dancing floor</li><li>(d) Terrace of a bungalow</li><li>(e) In a warehouse.</li></ul> | 10 |
| Q.7 | Explain with neat sketches what is pointing?   | 10 |

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