

S.No.F-B-227

SUBJECT CODE:
17AR110

**VINAYAKA MISSION'S RESEARCH
FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS-
APR/MAY -2019
HISTORY OF ARCHITECTURE - I**
(Candidates admitted under 2017 Regulations-SCBCS)

Time : Three Hours

Maximum
Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer ALL questions

- 1 Explain and sketch an Egyptian column with a bud capital.
- 2 What are the three types of Tombs in Egyptian architecture?
- 3 Describe the term 'Arcade'.
- 4 What is a Doric column?
- 5 What is a Corinthian column?
- 6 What are the elements used in Roman architecture?
- 7 Sketch a Groin vault and explain.
- 8 Draw the plan of Pisa cathedral.
- 9 What is Quadripartite vaulting and sexpartite vaulting?
- 10 What is Renaissance?

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

- 11 Explain with sketches the architectural features of Great temple of Ammon, Karnak.
- 12 Explain the Architectural character of Mesopotamian Architecture with examples.
- 13 Describe few features of Greek houses with examples.
- 14 What are the techniques used in Roman construction?
- 15 Discuss with sketches, the roman orders.
- 16 Explain the following in detail? I) Architectural character of Byzantine style II)Greek and Latin cross plans
- 17 How to recognize a Byzantine church?
- 18 Draw the types of timber roof churches.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

19.a Explain the architectural features of the following with sketches.I)Ziggurat, Urnammu.II)Palace of Sargon, Khorsabad.

OR

.b Explain in detail the architectural features of The Pantheon, Rome with sketches.

20.a Explain in detail the architectural features of English Gothic architecture. Explain the salient features of West Minister Abbey.

OR

.b Explain with sketches the architectural features of Parthenon, Athens and the optical corrections involved.

**VINAYAKA MISSION'S RESEARCH
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B.ARCH- DEGREE EXAMINATIONS-
APR/MAY-2019**

THEORY OF ARCHITECTURE

(Candidates admitted under 2017 Regulations SCBCS)

Time:Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 List out different elements of design in nature.
- 2 List out different kinds of planes and its characteristics
- 3 Define Symmetry and explain its principle with an example
- 4 Define Datum and explain its principle with an example
- 5 List out any three names of Indian Architects?
- 6 Define personal space and territory
- 7 Write a brief note on articulation of Edges and Corners.
- 8 What is Organic Architecture?
- 9 Explain about Golden Section with Sketch.
- 10 Describe the Importance of Graphics in Architectural Design?

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 Explain SHAPES as design elements with case study?
- 12 Explain FORM as design elements with case study?
- 13 Explain fractals in architecture.
- 14 Brief about any historical building which acts as a principle for Hierarchy.
- 15 Brief about any historical building which acts as a principle for Datum.
- 16 Explain about Form generating exercises to approach Site planning.
- 17 Brief in details about Louis – I – Khan – KIMBELL ART GALLERY
- 18 Brief in details about the study of Site Plan, City Plans and Conceptual Drawing,.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

- 19.a Explain various types of circulation within a building

OR

- .b How does role of elements enhance to emphasize the location, as landmark, for direction etc.?

20.a

Explain the principle and works Architect “B.V.Doshi”?

OR

- .b Explain the principle and works Architect “F.L.Wright”?

VINAYAKA MISSIONS UNIVERSITY, SALEM
(Deemed to be University)

B.Arch- DEGREE EXAMINATIONS –APR/MAY-2019

MATHEMATICS

(Candidates admitted under 2017 Regulation-CBCS)

Time: Three hours

Maximum:100Marks

Answer **ALL** questions

PART – A (10 x 2 = 20 marks)

1. What is the angle between the two planes?
2. What is the formula for the distance between the two parallel planes
 $ax + by + cz + d_1 = 0$ and $ax + by + cz + d_2 = 0$
3. Write the general equation of a right circular cylinder.
4. What is the condition for the two spheres to cut each other orthogonally?
5. Find the Eigen values of the matrix $\begin{pmatrix} 1 & 1 \\ 3 & -1 \end{pmatrix}$.
6. Two of the Eigen values of matrix $A = \begin{pmatrix} 3 & 1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{pmatrix}$ are 3 and 6. Find the Eigen values of A^{-1} .
7. Write down the properties of definite integrals.
8. Write the reduction formula for $\int \cos^n x dx$, when 'n' being positive integer.
9. Define saddle point.
10. Find $\frac{du}{dx}$ if $u = x^2y$ and $x^2 + xy + y^2 = 1$.

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

11. Find the value of k such that the set of four points (0, -1, -1), (-4, 4, 4), (k, 5, 1) and (3, 9, 4) are coplanar.
12. Find the angle between the line $\frac{x+1}{2} = \frac{y}{3} = \frac{z-3}{6}$ and the plane $3x + y + z = 7$.
13. Show that the spheres $x^2 + y^2 + z^2 = 64$ and $x^2 + y^2 + z^2 - 12x + 4y - 6z + 48 = 0$ touch internally. Find their point of contact.

14. (i) Prove that the two spheres $x^2 + y^2 + z^2 - 2x + 4y - 4z = 0$ and

$x^2 + y^2 + z^2 - 10x + 2z + 10 = 0$ touch each other and find the point of contact.

(ii) Find the equation of the sphere having the

circle $x^2 + y^2 + z^2 - 6x + 3y - z - 8 = 0$, $2x + 3y - z + 6 = 0$ as the great circle. Find its centre and the radius.

15. Find the Eigen values and Eigen vectors of the matrix $A = \begin{pmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{pmatrix}$.

16. Verify Cayley-Hamilton theorem and hence find its inverse of the matrix from

$$A = \begin{pmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{pmatrix}$$

17. Evaluate $\int_0^{\frac{\pi}{2}} \cos^3 x dx$

18. If $u = f(x-y, y-z, z-x)$ show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$.

Part-C (2 x 15 = 30 Marks)

Answer All questions

19.a) Prove that the lines $\frac{x-3}{1} = \frac{y+1}{3} = \frac{z-1}{-2}$ and $\frac{x-2}{2} = \frac{y-3}{-1} = \frac{z+4}{3}$

are coplanar. Find their point of intersection.

OR

b) Find the equation to the cone whose vertex is at $(0,0,0)$ and which passes through the curve of intersection of the spheres

$$x^2 + y^2 + z^2 + x - 2y + 3z = 4; \quad x^2 + y^2 + z^2 + 2x - 3y + 4z = 5.$$

20.a) Diagonalise the matrix $A = \begin{bmatrix} 1 & -1 & 0 \\ -1 & 2 & 1 \\ 0 & 1 & 1 \end{bmatrix}$ by orthogonal reduction.

OR

b) Evaluate $\int \tan^6 x dx$ by using reduction formula.

VINAYAKA MISSION'S RESEARCH FOUNDATION
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B.ARCH- DEGREE EXAMINATIONS- APR/MAY-2019

HISTORY OF ARCHITECTURE - II

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 What are Viharas and explain its components?
- 2 Sketch and explain the chaitya hall at Karle.
- 3 Explain the Pillars and Vaultings used in Buddhist Chaitya halls.
- 4 List the component of Ladhkhan temple with Santagara.
- 5 Sketch and explain – DharmarajaRatha.
- 6 Write about any two characters of Islamic architecture.
- 7 What do you understand by double dome?
- 8 Write short notes on Charminar, Hyderabad.
- 9 What are the typical characters of Mughal gardens?
- 10 Write a brief description of tomb of SalimChisti.

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 With neat sketches explain the planning principles adopted in design of Indus valley civilization.
- 12 With neat sketches explain lomas rishi and sudhama
- 13 With neat sketches explain Takht – i – Bahai of hellinistic style.
- 14 Write about the features of TEMPLE ARCHITECTURE.
- 15 What do you understand by the term Bhakti period and explain its importance of start from South India to North.
- 16 Sketch and explain the rock cut monasteries of mamallapuram.
- 17 Sketch the various components of temple from shrine to that of a temple complex.

- 18 Compare Buddhist and Hindu Temples.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

- 19.a Detail the evolution of Hindu temple and the evolution of Gopuram with suitable example and sketches.

OR

- .b Explain the complexity in planning and any two remarkable architectural details of Pandyas in Meenakshiamman temple at Madurai.

- 20.a Trace the evolution of Lingaraja Temple at Bhuvaneshwar from the early Orissan style to the present form with suitable sketches.

OR

.b

- Write a brief history of development of the Imperial Style of Delhi.

VINAYAKA MISSION'S RESEARCH FOUNDATION
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CLIMATOLOGY

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 Distinguish between Climate and Weather?.
- 2 Define macroclimate
- 3 What are the design recommendations for a warm dry climate?
- 4 What is stack effect?
- 5 Explain the use of design aid for climate design in buildings.
- 6 What are functions of ventilation?
- 7 What is convection?
- 8 What is meant by radiation? How is it calculated?
- 9 Define illuminance and what is its unit?
- 10 Define lumen.

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 Brief about meso-climate with suitable example.
- 12 Explain in detail about climatic variables of different zones.
- 13 Explain in detail about Horizontal Shading Devices
- 14 Explain about performance evaluation of Shading Devices.
- 15 Brief about natural Ventilation with relevant sketches.
- 16 Explain in detail about a case study for MANSOON climate.
- 17 What are the indices of Thermal comfort.
- 18 Explain with relevant examples the various control of openings for ventilation of spaces.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

- 19.a Explain the use of solar chart and shadow angle protractor for working out shading devices for buildings

OR

- .b What are some of the sun-redirecting devices? Explain any two in brief.

20.a

What is a azimuth altitude? Explain with the help of sketches their use in climatic design..

OR

- .b Explain the factors that affect the climate with their effects.

VINAYAKA MISSION'S RESEARCH FOUNDATION
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B.ARCH- DEGREE EXAMINATIONS- APR/MAY-2019

MECHANICS OF STRUCTURES - I

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks: 100 Marks

Part-A (10 x 2 =20 Marks)

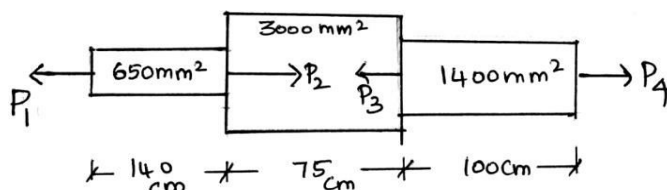
Answer **ALL** questions

- 1 State the law of parallelogram of forces.
- 2 State the conditions of equilibrium of a body on which three concurrent forces are acting.
- 3 What is a perfect frame?
- 4 What are the assumptions made in finding out the forces in a frame?
- 5 State the Theorem of Perpendicular Axis.
- 6 Name the different types of stress and strain with sketches.
- 7 Define Poisson's ratio.
- 8 Define 'Bulk Modulus'.
- 9 What do you mean by volumetric strain?
- 10 State the relation between Young's Modulus and Bulk Modulus.

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 The resultant of two forces, when they act at an angle of 60° is 14N. If the same forces are acting at right angles, their resultant is $\sqrt{136}$ N. Determine the magnitude of the two forces.
- 12 A simply supported beam of length 8m and carrying a uniformly distributed load of 10KN/m for a distance of 4m from the left end of 1m. Find reactions at the supports.
- 13 Write down the step by step procedure for the analysis of a truss by the method of sections.
- 14 Draw the stress-strain curve for a mild steel rod and explain the salient points.
- 15 The ultimate stress, for a hollow steel column which carries an axial load of 1.9 MN is 480 N/mm^2 . If the external diameter of the column is 200mm, determine the internal diameter. Take the factor of safety as 4.
- 16 How will you analyze the stress produced in a composite bar?
- 17 (i) Write a note on Principle of superposition.
(ii) A bar shown in fig is subjected to point load as shown in fig. Calculate the force P2 and also find the total elongation of the bar. Take $P_1 = 60\text{kN}$ and $P_3 = 500\text{kN}$, $P_4 = 150\text{kN}$ and modulus of Elasticity $E = 2 \times 10^5 \text{ N/mm}^2$.



18 A rod of 150cm long and of diameter 2.0cm is subjected an axial pull of 20 kN. If the Young's Modulus of the material of the rod is $2 \times 10^5 \text{ N/mm}^2$, determine: (i) stress, (ii) strain and (iii) elongation of the rod.

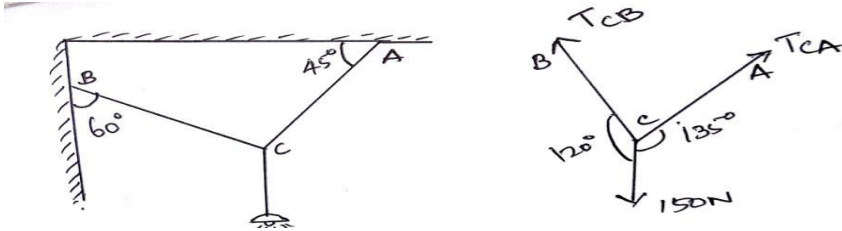
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2

Part-C (2 x 15 =30 Marks)

Answer **All** questions

19.a An electric light fixture weighing 150N hangs from a point C, by two strings AC and BC as shown in fig . Determine the forces in the strings AC and BC.



OR

.b Find the moment of inertia of T-section of 120mmx100mmx20mm size.

20.a

Find the moment of inertia of a symmetrical I-section of 200mmx140mmx20mm size.

OR

.b

An axial pull of 40kN is acting on a bar consisting of three sections of length 30cm, 25cm and 20cm and of diameters 2cm, 4cm and 5cm respectively. If the Young's Modulus = $2 \times 10^5 \text{ N/mm}^2$, determine: (i) stress in each section and (ii) total extension of the bar.

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VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS- APR/MAY-2019

ENVIRONMENTAL SCIENCE

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 What is water logging?
- 2 What are the effects of timber extraction on forests and tribal people?
- 3 Name the different ways to control soil erosion?
- 4 Enumerate the human activities which destroy the biodiversity.
- 5 What are called greenhouse gases?
- 6 Define thermal pollution.
- 7 Write an account on environmental ethics.
- 8 Define water shed management.
- 9 What is meant by population and population growth?
- 10 What are the objectives of family welfare program?

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 Which are the bio-diversity hotspots in India? What are the threats they face?
- 12 What is an ecosystem? What are its components? Explain the functions of each component with examples.
- 13 Explain the desert and grassland ecosystem in details.
- 14 What are the methods adopted for the control of air pollutants? Explain each briefly.
- 15 What are water pollutants Classified? Give examples of each type.
- 16 Write an elaborate notes on chemical and photochemical reactions in the atmosphere.
- 17 Explain the roles of state and central pollution control board.
- 18 What are resettlement and rehabilitation of people? Explain.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

- 19.a Write about the problems and benefits that are faced in constructing a dam.

OR

- .b Discuss about Carbon and Nitrogen cycle.

- 20.a Discuss the scope and limitations of rain water harvesting with respect to Indian Conditions.

OR

- .b Write a detailed account on the AIDS disease, its transmission tests and prevention measures.

**VINAYAKA MISSION'S RESEARCH FOUNDATION
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B.ARCH- DEGREE EXAMINATIONS- NOV/DEC
2018**

HISTORY OF ARCHITECTURE- III
(Candidates admitted under 2017 Regulations-SCBCS)

Time : Three Hours

Maximum
Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 With neat sketches explain the Cenotaph of Newton by Boullée.
- 2 Explain about the great fire of the Chicago and explain.
- 3 Describe "Art Deco" movement.
- 4 State the contributions of Peter Behrens.
- 5 Why ornamentation is crime according to Adolf Loos?
- 6 Explain form follows function and who stated it.
- 7 Explain the free flowing plan.
- 8 What do you understand by Minimalism?
- 9 What is "Rational" modernism?
- 10 What do you understand by the term expression in Architecture.

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 With neat sketches explain the works of University of Virginia by Thomas Jefferson.
- 12 State with neat sketches the following4
 - a. UN Head quarters
 - b. Vancouvers
- 13 State the examples with neat sketches on the following architects.
 - a. Thomas Jefferson
 - b. Jean Durand
- 14 Sketch and explain briefly about
 - a. St. Andrews church, Chennai
 - b. St. Georges church, Chennai
- 15 Sketch and explain the Cathedral of Bom Jesus with its components.

- 16 With neat sketches explain Seagram building New York
- 17 Write briefly on the Chicago school of thought. Elaborate briefly with sketches on any two of the main architects.
- 18 What are the defining characteristics of De constructivist architecture? Explain with appropriate building case studies.

(P.T.O)

Part-C (2 x 15 =30 Marks)

Answer All questions

- 19.a Elaborate briefly with sketches the contributions of Edwin Lutyen's towards architecture in India.

OR

- .b Robert Venturi's book 'Complexity and contradiction' is an anti thesis to minimalist architecture. Elucidate.

- 20.a What are the ideals of Art Nouveau movement and the features of its architecture? Discuss the ideas and works of Antonio Gaudi.

OR

- .b What was the objective and role of CIAM? Discuss some of the key ideas proposed and propagated in the various CIAM congresses.

VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS- NOV/DEC-2018
THIRD SEMESTER
THEORY OF DESIGN
(Candidates admitted under 2017 Regulations-SCBCS)

Time : Three
Hours

Maximum
Marks: 100 Marks

Part-A (10 x 2 =20 Marks)
Answer ALL questions

- 1 Explain the term Design in your Perception?
- 2 What is the principal element that stands Architecture from Art?
- 3 Give an example of Greek, Roman and Indian paintings?
- 4 Write any two design methodologies followed by an architects?
- 5 Describe 'Form' in architecture
- 6 What is a 'concept' for an architectural design problem?
- 7 Give two examples for linear organization.
- 8 Define the term Approach
- 9 Explain –Texture.
- 10 What is meant by dominance in buildings?

Part-B (5 x 10 =50 Marks)
Answer AnyFive questions

- 11 What are the medium in which art forms are reflected? Explain with example?
- 12 What are the types of design classification?
- 13 List any six creativity techniques and explain their use.
- 14 Explain in detail about the blocks in creative thinking and the ways to overcome blocks.
- 15 Explain the 'Organic architecture 'Prairie style house' concepts of F.L.Wright with typical examples
- 16 What are the various models of design process? Explain in detail?
- 17 Describe the three types of approaches in buildings
- 18 What is the importance of Symmetry in Architectural design and what is its relevance today?

Part-C (2 x 15 =30 Marks)

Answer **All** questions

19.a What is the process of design that you have used while designing?
Elaborate on its advantages & Disadvantages.

OR

.b What are the various models of the design process? Which is the one you agree with the most in your experience?

20.a Discuss about the theories of proportion and their application with examples.

OR

.b State the significance of Aesthetics in Architecture.

**VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS- NOV/DEC-2018
THIRD SEMESTER
THEORY OF DESIGN**

(Candidates admitted under 2017 Regulations-SCBCS)

Time : Three
Hours

Maximum
Marks: 100 Marks

Part-A (10 x 2 =20 Marks)

Answer ALL questions

- 1 Explain the term Design in your Perception?
- 2 What is the principal element that stands Architecture from Art?
- 3 Give an example of Greek, Roman and Indian paintings?
- 4 Write any two design methodologies followed by an architects?
- 5 Describe 'Form' in architecture
- 6 What is a 'concept' for an architectural design problem?
- 7 Give two examples for linear organization.
- 8 Define the term Approach
- 9 Explain –Texture.
- 10 What is meant by dominance in buildings?

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

- 11 What are the medium in which art forms are reflected? Explain with example?
- 12 What are the types of design classification?
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Part-C (2 x 15 =30 Marks)

Answer **All** questions

19.a What is the process of design that you have used while designing?
Elaborate on its advantages & Disadvantages.

OR

.b What are the various models of the design process? Which is the one you agree with the most in your experience?

20.a Discuss about the theories of proportion and their application with examples.

OR

.b State the significance of Aesthetics in Architecture.

**VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS- NOV/DEC-2018
THIRD SEMESTER**

MECHANICS OF STRUCTURES-II
(Candidates admitted under 2017 Regulations-SCBCS)

Time :
Three
Hours

Maximum
Marks:100
Marks

Part-A (10 x 2 =20 Marks)

Answer ALL questions

- 1 What are the different types of load acting on a beam?
- 2 Define modulus of elasticity.
- 3 What is meant by simply supported beam?
- 4 Define moment of Inertia.
- 5 What are the reasons for column to fail?
- 6 State the relation between effective length and actual length when both ends of the column are hinged.
- 7 Determine the degree of indeterminacy for a beam with fixed support at one end and hinged support at the other end.
- 8 Determine the degree of indeterminacy for a beam with fixed support at one end and roller support at the other end.
- 9 What is meant by Fixed End Moment?
- 10 What is meant by portal frame?

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

- 11 Explain about the sign conversion in drawing bending moment and shear force diagram.
- 12 A circular beam of 200mm diameter and the beam is subjected to shear force of 70KN. Calculate average and maximum shear stress.
- 13 A cantilever of length 3m is carrying a point load of 25KN at the free end. If the moment of inertia of the beam = 10^8 mm^4 and value of $E= 2.1 \times 10^5 \text{ N/mm}^2$, Find the deflection of the cantilever at the free end.
- 14 Explain in detail about the failure of a long column.
- 15 A solid round bar 3m long and 5cm in diameter is used as a strut. Determine the crippling load i)whenboth ends are hinged, ii)when both ends are fixed.
- 16 What are the solution procedure for solving indeterminate structures?

- 17 Explain in detail about different types of frames.
 18 Discuss in detail about the moment distribution analysis procedure for beams.
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Part-C (2 x 15 =30 Marks)

Answer All questions

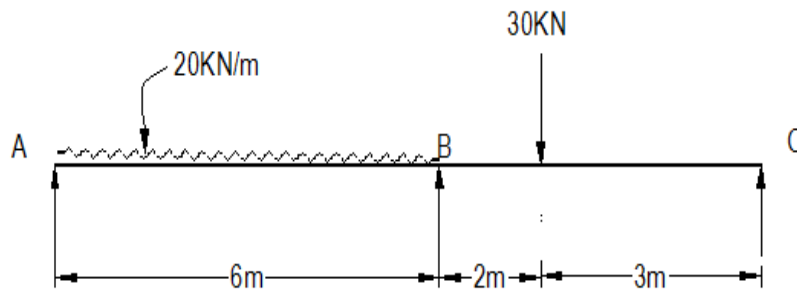
- 19.a Determine the reaction components in the propped cantilever whose length is 7m , which has fixed support at one end and roller support at the other end. It carries a point load of 15KN at a distance of 3m from the fixed support end. EI is constant throughout.

OR

- .b A cantilever 3.6m long carries load of 30,70,40 and 60KN at a distance of 0,0.6,1.5 and 2.4m respectively from the free end. Draw the SF and BMD for the cantilever.

- 20.a

Analyse the continuous beam shown by moment distribution method.



OR

- .b A column of timber section 15cm * 20cm is 6m long both ends being fixed. If the youngs modulus for timber = 17.5 KN/mm². Determine crippling and safe load for the column if factor of safety =3.

**VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS- APR/MAY-2019**

MECHANICS OF STRUCTURES – II

(Candidates admitted under 2017 Regulations-SCBCS)

Time :
Three
Hours

Maximum
Marks:100
Marks

Part-A (10 x 2 =20 Marks)

Answer ALL questions

- 1 Mention the types of support.
- 2 What is meant by Flitched beams?
- 3 State the Bending equation.
- 4 Define Stress.
- 5 Define Column.
- 6 Define crippling load.
- 7 Determine the degree of indeterminacy for a beam with fixed support at one end and hinged support at the other end.
- 8 What is method of consistent deformation?
- 9 What is meant by Space structures?
- 10 Differentiate between one way slab and two way slab.

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

- 11 Explain about the sign convention in drawing bending moment and shear force diagram.
- 12
A rectangular beam of 15cm wide and 20cm deep is subjected to load 2500kg. calculate the maximum shear stress. If the load is distributed uniformly over the beam, calculate maximum shear stress.
- 13
A cantilever of length 3m is carrying a point load of 25KN at the free end. If the moment of inertia of the beam = 10^8 mm^4 and value of $E= 2.1 \cdot 10^5 \text{ N/mm}^2$, Find the deflection of the cantilever at the free end.
- 14 Define column. Explain in detail about the failure of a short column.
- 15 What are the assumptions made in the Euler's Column Theory?

- 16 Determine the degree of indeterminacy for the following beams
- Fixed support at one end hinged support at the other end
 - Fixed support at both ends
 - Fixed support at one end, roller support at the centre and hinged support at the other end
 - Fixed support at both ends and roller support at the centre.
 - Hinged support at one end, roller support at the centre and roller at the end support.
- 17 Explain in detail about different types of frames.
- 18 A parabolic 3 hinged arch carries a udl of 25kn/m on the left half of the span. It has a span of 12.5 m and a central rise of 4 m. Determine the resultant reaction at supports.

Part-C (2 x 15 =30 Marks)

Answer All questions

- 19.a Determine the reaction components for the propped cantilever subjected to uniformly distributed load which has fixed support at one end and roller support at the other end. The length of the beam is L.

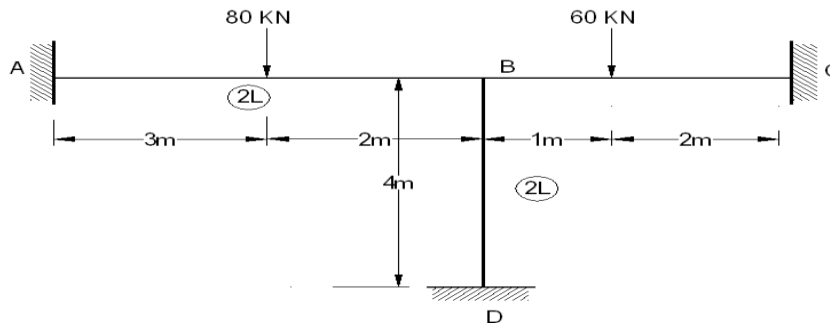
OR

- .b Derive the bending equation.

(P.T.O)

2

- 20.a Analyse the structure shown by moment distribution method.



OR

- .b

A cantilever 120mm wide and 200mm deep is 2.5m long. What is the uniformly distributed load which the beam can carry in order to produce a deflection of 5mm at the free end? Take $E=200 \text{ GN/m}^2$.

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VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.ARCH- DEGREE EXAMINATIONS- APR/MAY-2019

CONTEMPORARY ARCHITECTURE

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer ALL questions

- 1 Sketch Jewish Museum, Berlin of Daniel Libeskind.
- 2 What do you understand by the term 'Brutalism'?
- 3 Define 'Pop Architecture'.
- 4 What do you understand by the term Locus?
- 5 What do you understand by Historicism?
- 6 What is the full form of CIAM why is it formed?
- 7 What do you understand by the design of Gehry house by Frank O Gehry?
- 8 What do you understand by Mesa City?
- 9 What do you understand by the term Neo Rationalism and explain?
- 10 State any four materials and construction techniques adopted by Laurie baker and how it was cost effective?

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

- 11 Elaborately explain the need for the critique of the modernism and the influence of writings in postmodern architecture
- 12 Sketch and explain Lloyds Building and Millennium dome of Richards Rogers.
- 13 Mention few architects of Team 10 and explain the aims and critics of the same.
- 14 What do you understand by the ideologies of Charles Moore and explain it any two examples of the same?
- 15 What do you understand by Athena Charter of CIAM explain
- 16 What do you understand by the writings of Robert venturi on Complexity and contradiction in Architecture Vs Simplicity and Picturesqueness?
- 17 What do you understand by the following according to Jane Jacobs
 - a. Peculiar nature of the cities
 - b. Condition for city dwellers
 - c. Forces of decline and Regeneration
 - d. Different Tactics
- 18 Briefly explain the following
 - a. Lunuganga estate
 - b. Srilankan parliament
 - c. Ruhunu University, Matata
 - d. Colombo house

Part-C (2 x 15 =30 Marks)

Answer All questions

- 19.a What are the conditions of post modernism with the death of modern architecture, Pluralism and Crisis in architecture?

OR

(P.T.O)

.b What do you understand by the term Brutalism? With the help of the relevant sketches explain the works of Le Corbusier, and James sterling explain their contributions towards Brutalism.

20.a With four examples explain the inclusiveness of the design by Geoffrey Bawa to suit the climate and needs of Srilanka.

OR

.b What are the design ideologies of Charles Correa? How was he successful in understanding the needs of urban poor explain it with Belapur housing and Tube House Gujarat?

S.No.F-B-228

VINAYAKA MISSION'S RESEARCH FOUNDATION
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BUILDING SERVICES - I

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 What is the rate of demand for sanitation purposes?
- 2 Write a note on quality of water used for trade or commercial purpose.
- 3 Sketch and explain 'surface springs'.
- 4 What is the need of rain water harvesting?
- 5 What is the need for the development of sanitary engineering?
- 6 Draw sketches of : (i) S-trap and (ii) Floor trap.
- 7 What are the different types of pumps used?
- 8 What is Sewage treatment plant?
- 9 How to manage water in Office buildings.
- 10 Name few specifications of a centrifugal pump.

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 Discuss the factors which affect the rate of demand.
- 12 Describe with sketches the various methods of layout of distribution pipes in a water supply project.
- 13 Explain with neat sketches the construction process of infiltration gallery and infiltration well.
- 14 Discuss about the quality of water required for some of the common trades.
- 15 Describe the various patterns which are adopted for the refuse collection.
- 16 Compare different types of motors used in Sanitation.
- 17 How Sewage treatment plant used in hospital and public buildings?
- 18 Enumerate the Specification of pumps and pipes used in water supply and sanitation.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

- 19.a What are the advantages of a successful water supply scheme? Enumerate the points that should be considered while selecting the site for a water supply project?

OR

- .b Prepare a water distribution plan for an office building.

20.a

Explain in detail about the various Energy efficient systems used in water supply and sanitation.

OR

.b

Narrate the theory, constructional features and design aspects of a septic tank.

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DESIGN OF STRUCTURES - II

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer **ALL** questions

- 1 What are the types of retaining wall?
- 2 Explain about counter fort retaining wall.
- 3 What are the advantages of brick masonry?
- 4 List out the loading condition on walls?
- 5 List out the defects in the timber?
- 6 What are the types of timber?
- 7 Explain about pitch distance?
- 8 What are the two criteria for a design of tension member?
- 9 What is meant by short strut?
- 10 What is the purpose for providing anchors bolt in base plate?

Part-B (5 x 10 =50 Marks)

Answer **AnyFive** questions

- 11 Explain cantilever retaining wall with neat sketch.
- 12 Explain about the stability analysis on retaining wall.
- 13 Explain in detail about the tests conducted on bricks.
- 14 Explain in detail about the types of timber in detail.
- 15 Explain in detail about the madras terrace roof design.
- 16 Explain in detail about bolt value.
- 17 Derive the design procedure for lug angle.
- 18 Explain in detail about the elongation of tension member.

Part-C (2 x 15 =30 Marks)

Answer **All** questions

- 19.a A flat plate having cross sectional dimension 200X12mm is connected to a gusset plate with six bolt of 20mm diameter determine:-
- (1) Axial tensile load plied on the plate if the bolt is arranged in chain pattern in two columns
 - (2) Axial tensile capacity of the plate if the staggered pitch 40mm and gauge 25mm
 - (3) Determine the strength of the joint
 - (4) Efficiency of the joint

OR

.b

A Double cover butt joint consist of two cover plates each having thickness 10mm to connect the main plates of 16 mm thickness. The external load applied is 150KN(factored).Determine the number of 16mm diameter bolt assuming pitch distance as 40mm and edge distance as 30 mm.Take size of plate as 150mmX16mm?

(P.T.O)

20.a

Determine the number of 12mm diameter bolt to connect two plates having size 80mmX12mm and 80mmX16mm. Use the grade of bolt 4.6. Also determine the efficiency of the lap joint?

OR

.b A tension member section having section ISA 125X150X12mm is connected to a gusset plate with 6 bolts of 16 mm diameter in a single row at a pitch distance of 75 mm. Determine the factored load based on

(1) Yielding criteria

(2) Rupture criteria

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ELECTIVE - ERGONOMICS

(Candidates admitted under 2017 Regulations-SCBCS)

Three Hours

Maximum Marks:100 Marks

Part-A (10 x 2 =20 Marks)

Answer ALL questions

- 1 Define ergonomics .
- 2 Define gross human anatomy.
- 3 Explain occupational hazard in work environment .
- 4 List down the types of Anthropometry.
- 5 What is Dynamic office workstation?
- 6 Define :Visual stress.
- 7 List down the guidelines in designing Public Bathroom for Wheel bound Person.
- 8 List down the types of Anthropometry.
- 9 Briefly explain about physical Ergonomics.
- 10 Define gross human anatomy.

Part-B (5 x 10 =50 Marks)

Answer AnyFive questions

- 11 Explain in short about dynamic anthropometrics.
- 12 Briefly discuss about the human comfort in relation to the basic concepts of day lighting and artificial lighting.
- 13 What are the advantages of the ergonomically designed work chair
- 14 What is the relation between Anthropometry and Size of a Room? Why height of a typical door is 7'.

- 15 Illustrate the use of Physical and psychological ergonomics in space design with examples.
- 16 How Comfort level is achieved using Anthropometry and ergonomics .
- 17 Illustrate the anthropometric design standards of the following
 - a. Drafting table layout
 - b. Drafting Cubicle design
- 18 Differentiate Structural Anthropometry and Functional Anthropometry.

Part-C (2 x 15 =30 Marks)

Answer All questions

- 19.a What is role of Ergonomics and Anthropometric data in Work Chair Design? Explain in Detail.

OR

- .b Illustrate and explain in detail the following with relevant anthropometric and ergonomic data
- a. Child play area (Indoor) in a space of 10M X 10M
 - b. Old People Relaxing space (Outdoor Public Park)

- 20.a Explain anthropometric standards using diagrams for the following

- a. Floor exercise
- b. Basic Spacing for exercise class
- c. Dance and exercise practice Room

OR

- .b What are the role of Anthropometric data in public spaces design? Briefly explain any two in detail.
