

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

(Autonomous)

Reg. No.

April 2019 Examinations

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

History of Architecture-II

Year/Sem: II / IV (EVEN-II)

Max. Marks : 75

Time : 3 hr.

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 Mention any two features of Vedic Period.
- 2 Mention any two features of Ashokan Pillars.
- 3 Mention any two features of Ajantha rock cut architecture.
- 4 What are the features of Shore Temple at Mahaballipuram?
- 5 Mention any two features of Dravidian Architecture.
- 6 What are the building materials used for the Indo Aryan Temples?
- 7 What are the characteristics feature of Indo-Islamic Architecture?
- 8 Mention any two similarities between Lingaraja temple and Sun temple?

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 What are the features of Great Bath in Indus Valley Civilization?
- 10 What are the features of early shrines constructed during the period of Gupta?
- 11 Write an elaborate note on evolution of temple gopuram during the Dravidian period.
- 12 What are the building materials used for the Indo Aryan Temples?
- 13 What are the prime characteristics features of an Indo Aryan style?
- 14 What are the building materials used by Islamic rulers in Middle East, South East Asia and Pakistan?
- 15 What are the low cost techniques adopted by Laurie baker?
- 16 Mention any two examples for the rock cut architecture during the period of Pallavas.

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

- 17 A Write an elaborate note on wooden construction under Mauryan rule. 10
(OR)
B Explain with sketch: Takti Bhai Monastery Complex. 10
- 18 A Write an elaborate note on evolution of Hindu Temple with sketches. 10
(OR)
B Explain with Sketch: Virupaksha Temple, Pattadakal. 10
- 19 A Explain with sketch: Bregadeeswara Temple, Tanjore. 10
(OR)
B Explain with sketch: Meenakshi Amman Temple, Madurai. 10
- 20 A Write an elaborate note on architectural characteristics of Lingaraja temple with suitable sketches. 10
(OR)
B Explain with sketch: Sun Temple, Konark. 10
- 21 A Explain with sketch: Tajmahal, Agra. 10
(OR)
B Write an elaborate note on contribution made by architect B.V. Doshi towards the Indian Contemporary Architecture. 10

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 Define the term Elasticity and Creep.
- 2 Draw the stress-strain curve of ductile material.
- 3 What are the different types of support conditions of beam?
- 4 When you call a section is symmetry? Give example.
- 5 Draw the deflected shape of any two types of beams.
- 6 State Mohr's theorem for slope.
- 7 Differentiate short column and long column.
- 8 Define bending moment with sign convention.

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 Write short notes on different types of stresses.
- 10 Define the terms (i) Lateral strain (ii) Poisson's ratio (iii) Rigidity Modulus
- 11 Differentiate determinate and indeterminate beams.
- 12 State and prove perpendicular axes theorem.
- 13 State Clapeyron's theorem of three moments.
- 14 Draw the effective length of columns with different end conditions.
- 15 Define the terms (i) Space diagram (ii) Vector diagram (iii) Bow's Notation
- 16 Define the terms (i) Centroid (ii) Moment of Intertia (iii) Section Modulus

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

- 17 A A bar of length 200 mm is circular in section and is uniform diameter of 30 mm. It is subjected to an axial pull of 300 kN and the extension in length is 0.30 mm. The contraction in diameter is 0.015 mm. Determine the values of Poisson's ratio, E, G and K. 10

(OR)

- B During the tension test on M.S. Specimen the following observations were made. 10

Diameter of the rod	=	25 mm
Gauge length	=	250 mm
Yield load	=	90 kN
Ultimate load	=	125 kN
Breaking load	=	100 kN
Final length of specimen	=	256.6 mm
Neck diameter	=	19.5 mm

Determine Yield stress, Ultimate stress, Breaking stress, Percentage of Elongation and Contraction.

- 18 A A cantilever beam of 4 m length is loaded as shown in figure (i). Find the reaction and draw SFD and BMD. 10
- (OR)
- B A simply supported beam AB of span 6 m is loaded as shown in figure (ii). Find the reaction and draw SFD and BMD. 10
- 19 A Locate the centroid of a channel section as shown in figure (iii). 10
- (OR)
- B Find the moment of Inertia about XX and YY axis of the 'T' section as shown in figure (iv). 10
- 20 A A cantilever beam AB of length 4 m carries an UDL of 20 kN/m over its entire length in addition to central point load of 25 kN. Calculate the maximum slope and deflection of beam. Take $E = 2 \times 10^5 \text{ N/mm}^2$ and $I = 3 \times 10^8 \text{ mm}^4$. 10
- (OR)
- B A two span continuous beam ABC is loaded as shown in figure (v). Analyse the beam by Clapeyron's theorem of three moment method. Draw BMD and SFD. 10
- 21 A Compare the buckling loads by Euler's formula and Rankine's formula for a hollow steel strut of 4.5 m long having outer diameter 45 mm and inner diameter 40 mm respectively. The strut is hinged at both ends. Take $\sigma_c = 335 \text{ N/mm}^2$ $E = 2.1 \times 10^5 \text{ N/mm}^2$ and Rankines constant as $\frac{1}{7500}$. 10
- (OR)
- B Determine the magnitude and nature of forces in the members of truss shown in figure (vi) by Graphical method. 10

PART-C

Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

(ii) All divisions carry equal marks.

17 A A bar of length 500 mm is circular in section and is uniform diameter of 30 mm. It is subjected to an axial pull of 30 kN and the extension is 0.30 mm. The extension is divided into 5 equal parts. Calculate the values of Poisson's ratio, E and ν .

(OR)

18 B During the tension test on M.S. specimen the following observations were made:

- Length of the specimen = 250 mm
- Original diameter = 12.5 mm
- Final diameter = 11.5 mm
- Original length = 250 mm
- Final length = 260 mm
- Original load = 20 kN
- Final load = 25 kN
- Original gauge length = 50 mm
- Final gauge length = 55 mm

Determine the stress, ultimate stress, elongation, percentage elongation and reduction of area.

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DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Building Services-I

Year/Sem: II / IV (EVEN-II)

Max. Marks : 75

Time : 3 hr.

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 Define two switches. Where it is provided?
- 2 What is meant by bus bar? Write its uses.
- 3 Define illumination.
- 4 What is meant by energy efficient lighting? Give examples.
- 5 State any two uses of fossil fuels.
- 6 What is meant by geothermal energy?
- 7 Differentiate garbage and refuse.
- 8 Where CCTV cameras are used mostly?

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 Write short notes on generation of power.
- 10 Explain briefly about exhaust fan.
- 11 Differentiate luminous flux and luminous intensity.
- 12 Write short note on solar lighting.
- 13 How electricity is produced from water? Explain.
- 14 Why circular section are preferred for sewers?
- 15 State functions of BMS.
- 16 What are the principles of good lighting?

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

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|----|---|--|----|
| 17 | A | Explain the different types of fuses with sketches. | 10 |
| | | (OR) | |
| | B | Describe the preparation of electrical layout for a residential building. | 10 |
| 18 | A | Write the general principles to be followed to provide openings to get good lighting. | 10 |
| | | (OR) | |
| | B | Why artificial lighting is necessary on buildings? Explain any one type of artificial lighting with a neat sketch. | 10 |
| 19 | A | What are the necessities of using renewable energy? What are its advantages? | 10 |
| | | (OR) | |
| | B | What is meant by biomass energy? Explain in detail. | 10 |
| 20 | A | Describe in detail trickling sand filter with a neat sketch. | 10 |
| | | (OR) | |
| | B | Prepare a drainage layout for residential unit. | 10 |
| 21 | A | Explain with sketches the access control and perimeter protection systems. | 10 |
| | | (OR) | |
| | B | Explain different types of CCTV cameras. | 10 |

- 18 A Find the area of the closed traverse having the following data by the co-ordinate method. 10

Side	Latitude(m)	Departure(m)
AB	+225.5	+120.5
BC	-245.0	+210.0
CD	-150.5	-110.5
DA	+170.0	-220.0

(OR)

- B A transit was set up at a distance of 187 m from a temple. The angle of depression to the temple was $3^{\circ} 12'$ and the angle of elevation to its top was $10^{\circ} 2'$. The elevation of the instrument axis 176.150 m. Find the height of the temple and the elevation of top. 10

- 19 A The following observation was made with a tacheometer find out the constants of that instrument with line of sight horizontal 10

Int at	Staff at	Distance form station "O" in m	Top hair reading (m)	Bottom hair reading (m)
O	P1	10	1.50	1.60
	P2	20	2.00	2.200
	P3	30	2.50	2.800

(OR)

- B Enumerate any ten characteristics of total station 10

- 20 A The following offsets were taken from a chain line to an irregular boundary line at an interval of 10 m:
0, 2.50, 3.50, 5.00, 4.60, 3.20, 0 m.
Compute the area between the chain line, the irregular boundary line and the end of offsets by mid ordinate rule. 10

(OR)

- B The area enclosed by contours at the site of reservoir and the face of the proposed dam as computed by a planimeter are as shown below. 10

Contour level in metres	Area (Sq.m)
1000	400
1005	1500
1010	3000
1015	8000
1020	18000
1025	25000
1030	40000

Taking 1000 m as the bottom level of the reservoir and 1030 m as the highest level achievable, compute the capacity of the reservoir.

- 21 A Explain the following segments of GPS a) Space segment b) User segment c) Control segment. 10

(OR)

- B Explain the field application GIS in a) Natural resources b) Agriculture and c) Soil. 10