



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

End - Term Examinations – December 2025

Date: 08-12- 2025

Time: 01:00pm – 04:00pm

School: SOD	Program: Bachelor of Design, Space Design		
Course Code : DES2027	Course Name: BUILDING SERVICES		
Semester: V	Max Marks: 100	Weightage: 50%	

CO - Levels	C01	C02	C03	C04	C05
Marks	35	35	30	-	-

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1.	Name two key design factors that influence the selection of ceiling-mounted general lights in interiors.	2 Marks	L1	C01
2.	Mention two ergonomic factors that determine the mounting height of lighting fixtures such as pendants or sconces in interiors.	2 Marks	L1	C01
3.	State two reasons why maintaining the correct drainage slope is essential in plumbing design.	2 Marks	L1	C02
4.	Give two benefits of providing adequate ventilation in occupied interiors.	2 Marks	L1	C03
5.	List two components of a fire-alarm system and state their functions.	2 Marks	L1	C03
6.	Mention two advantages of LED lighting in interior spaces.	2 Marks	L1	C01
7.	State two standard mounting heights recommended for switchboards and sockets in residential interiors, and explain how these heights improve accessibility and safety.	2 Marks	L1	C01

8.	Name two filter types used in HVAC systems and describe what each removes.	2 Marks	L1	C03
9.	List two factors to consider when selecting colour temperature for task or display lighting.	2 Marks	L1	C01
10.	Differentiate between greywater and blackwater with one example of each.	2 Marks	L1	C02

Part B

Answer the Questions.

Total Marks 80M

11.	a.	Prepare an ergonomic electrical layout for a standard bedroom. Show switchboard heights, socket locations and circuit separation with a short note on energy-efficient lighting choices. Include an annotated plan.	10 Marks	L2	C01
Or					
12.	a.	Prepare a plumbing layout for a residential washroom showing supply and drainage lines, trap positions and venting. Explain how green building plumbing practices, fixture grouping and slope affect performance. Add a neat sketch.	10 Marks	L2	C02
Or					
13.	a.	Explain the types of HVAC systems used in small residential or commercial spaces. Support your answer with sketches those systems. In your explanation, describe the basic idea behind how each system functions, and mention the kinds of rooms or interior conditions where each system is commonly installed.	10 Marks	L2	C02
Or					
14.	a.	Describe four types of plumbing traps used in interiors (P-trap, S-trap, bottle trap, floor trap). For each briefly sketch its shape and state the most common application.	10 Marks	L2	C02
Or					
15.	a.	Explain earthing and protective devices in small residential installations. Define earthing, explain the role of a MCB, and list two installation practices to enhance electrical safety in wet areas.	10 Marks	L2	C01
Or					
16.	a.	For a 12 m ² living room, propose a sustainable HVAC and ventilation strategy focusing on system selection, airflow path, and energy-saving design choices. Include a short note on maintenance accessibility.	10 Marks	L3	C03

17.	a.	State appropriate lux (Illuminance) targets for three different interior tasks (reading/study, dining, and circulation). Elaborate how to control glare and preserve visual comfort.	10 Marks	L2	CO1
Or					
18.	a.	A G+1 residence has toilets stacked on first floor above ground-floor toilet. Draw a vertical plumbing section showing soil stack, waste connections, traps and venting. Annotate typical pipe diameters and slopes and give brief justification for stack locations.	10 Marks	L2	CO2

19.	a.	<p>Prepare a simple fire-detection layout for a small residential unit consisting of a living room, bedroom and kitchen. Support your response with a neat annotated sketch. Your answer should describe:</p> <ul style="list-style-type: none"> • The placement of fire-detection devices based on room function and safety requirements (e.g., circulation areas, sleeping areas). Also basic working principle of a smoke detector. • Two practical considerations to ensure that the fire-detection arrangement reduces false alarms and improves early warning. • Labels and notes on your sketch indicating detection coverage in each room. 	10 Marks	L2	CO3
------------	-----------	---	---------------------	-----------	------------

Or					
20.	a.	<p>Describe the overall purpose of communication systems in a small interior space. List the different communication systems used in buildings and briefly state the function and usage of each.</p> <p>Additionally, explain the role of smart and automated systems like LAN, Wi-Fi, CCTV, and smart sensors. Explain their importance in improving safety, convenience and energy efficiency. Show their interconnections using a labelled mind-map.</p>	10 Marks	L3	CO3

21.	a.	Design the plumbing system for a compact kitchen counter with sink and space for a washing machine. Show inlet routing, trap type, slope, and safe electrical clearances. Include a labeled sketch.	10 Marks	L3	CO2
------------	-----------	---	---------------------	-----------	------------

Or					
22.	a.	Explain how a ceiling-cassette AC distributes air. Cover the components, supply/return paths and two installation factors that affect efficiency with a simple labelled diagram.	10 Marks	L2	CO3

23.	a.	For a 12 m ² bedroom, prepare an integrated services layout combining electrical and HVAC systems. Show coordinated routing of ducts, diffusers, lighting layers and switchboards, ensuring comfort and safety. Add a labelled plan.	10 Marks	L3	CO3
Or					
24.	a.	Explain how plumbing stacks and venting are coordinated in a multi-storey residential building. Draw a vertical section showing soil, waste and vent stacks with pipe diameters and vent terminations. Add short notes on maintenance access and fixture alignment for efficiency.	10 Marks	L3	CO2
25.	a.	Prepare a retail lighting strategy for a boutique interior, describing ambient, task and accent lighting layers, suitable fixture types and their CRI / colour-temperature selection to enhance product display and brand ambience.	10 Marks	L3	CO1
Or					
26.	a.	Explain the basic principles of electrical circuit planning for a residential interior. Create a mind-map that shows how different circuits (lighting, socket-outlet circuits and high-load appliance circuits) are organised within a room or small home. Your answer should include: <ul style="list-style-type: none"> • How and why circuits are separated based on load and function. • Typical components of each circuit (fixtures, outlets, appliances). • Recommended placement and height of switchboards and sockets as per residential standards. • Basic wiring routes followed in walls and ceilings to ensure safety and ease of maintenance. • A clear mind-map diagram showing the main circuit divisions and how they connect to electrical points in the interior. 	10 Marks	L2	CO2