



PAV-6502

Seat No. _____

B. Architecture (Sem. V) Examination
October / November - 2018
Environmental Science & Services - III

Time : 2 Hours]

[Total Marks : 80

SECTION - I

- Instructions :** (1) All questions carry equal 20 marks.
(2) Support your answer with neat and relevant sketches, legible nomenclature and appropriate dimensions, as necessary.
(3) Assume all relevant data rationally, as required.

PART - 1 : Fire Fighting and Protection (20 Marks)

- 1 Design 'Automatic, Internal, Wet-riser Fire-fighting system' for 40 mts. high building and discuss about relevant design criteria for system i.e. location and placement of service, components, size and dimensions, nos. of users, building material and construction, etc.

OR

- 2 Discuss 'Passive Safety Aspects' and explain 'Escape Mechanisms' for 70 mts. high building.

OR

- 3 (1) Explain in Brief : (any Five, for 02 marks each)
(a) Fire Detection System in Building
(b) Fire Alarm System in Building
(c) Sprinkler System in Building
(d) Suppression Gas System in Building
(e) Hypoxic Air System in Building
(f) Wet Chemical System in Building
(2) Discuss in Brief : (any Five, for 02 marks each)
(a) Transformation of Fire
(b) Development of Fire
(c) Classification of Fire
(d) Classification of Buildings, as per Fire
(e) Fire retardant value of materials
(f) Fire load in any building

PART-2 : Mechanical Circulation 20 Marks

- 1 Design 'Passenger and Stretcher Elevators system for 70 mts. high Hospital building' and discuss about relevant design criteria for the system i.e. location or placement of service components, size and dimensions, nos. of users, building material and construction, etc.

OR

- 2 Elaborate each in brief : (any Four, for 05 marks each)
- (a) Elevators
 - (b) Escalators
 - (c) Conveyor Belts
 - (d) Moving or Side Walkways
 - (e) Over-head Cranes or Hoists

OR

- 3 (1) Explain in Brief : (any Five, for 02 marks each)
- (a) Passenger Elevator
 - (b) Freight or Goods Elevator
 - (c) Automobile or Vehicle Elevator
 - (d) Hospital or Stretcher Elevator
 - (e) Capsule of Glass Elevators
 - (f) Dumb Waiter or Ejection Elevator
- (2) Discuss in Brief : (any Five, for 02 marks each)
- (a) Hydraulic Lift
 - (b) Traction Lift
 - (c) Fire Lift
 - (d) Lift Car
 - (e) Lift Well or Shaft
 - (f) Lift Machine Room

SECTION - II

- 1 Answer any **two** : 10
- (a) Explain the working of ELCB.
- (b) Discuss the single line diagram of the power system.
- (c) What is earthing? What is its need? Explain one type.
- (d) Write a note on the solar rooftop energy.
- 2 Explain the general rules of wiring. 5
- 3 Fill in the blanks from the given choices : 5
- (1) In India power frequency is _____ Hz.
(40, 50, 60)
- (2) Working voltage for the single phase domestic consumer in India is _____ Volts.
(230 V, 110V, 415 V)
- (3) Solar power production by the solar panels is in the form of _____.
(DC, AC, Both)
- (4) The unit of energy is _____.
(W, WH, V)
- (5) Lux = _____ /m².
(Lumens, Flux, Light)
- 4 Following devices are working as shown. Find the monthly bill of a residence considering 30 days for a month and unit charge Rs. 6.5. 5

Device Name	Wattage	Numbers	Operational Hours per day
TV	100	1	5
Refrigerator	130	1	24
Tube-light	50	4	5
Washing Machine	600	1	1.25
Fan	70	4	6
Bulb	40	2	6
Motor	750	1	0.5

- 5 24 m * 30 m Workshop is to be illuminated with 180 Lux uniformly. If the bulb efficiency is 24 lumens/watt, utilization factor 0.75 and maintenance factor 0.85, find the numbers and positions of the lamps with their wattage ratings. Draw the diagram. Take space to height ratio = 0.75 and height of the floor = 3.6 m.
- 6 Mark the suitable location of the electrical points for a house shown in the figure. Decide the number of sub-circuits and draw the wiring diagram.

	Tube	Lamp	Fan	Socket
Bed room	2	0	2	Two 5 A sockets
Kitchen	1	1	1	Two 5 A sockets and one 15 A socket
Dining Room	1	0	1	One 5 A Socket
Drawing room	2	0	2	One 5 A Socket
WC and Bath	0	1	0	One 5 A Socket
Verandah	0	1	0	One 5 A Socket
Wash	0	1	0	One 15 A Socket
Service Yard	1	0	1	0

