

Central Public Works Department  
Department Examination for  
Assistant Executive Engineer (E)  
Electrical Engineering Paper- I  
(Without Books)  
July, 2018

Time: 3 Hours

Maximum Marks: 100

Note: Attempt any five questions. All questions carry equal marks.

1. Answer following: -

2.5 X 8 = 20

- a) What is the Classification of Point Wiring? What is sub- main Wiring and Circuit Wiring?
- b) How many 16A outlets can be fed by one power circuit in non-residential building and how many 6A outlets can be fed by one power circuit in residential building?
- c) What are different tests of an Internal Electrical Installation? Who witnesses these tests of a completed installation in the Department?
- d) What is the color coding followed in wiring? In case of point wiring how many joints are permitted in phase, neutral and earth conductor?
- e) What are rising mains? How Bus trunking is different from Rising Mains?
- f) What is Lightning Protection of Building & What are its Principle components?
- g) What is degree of protection of electrical equipment and how it is specified? What is the degree of protection for indoor and outdoor applications if it is not specified?
- h) What is Armoring of the underground cable and how it is done? Why sand cushioning is provided while laying cable in ground? What are Route Markers and what is the interval between two route markers?

2. Answer following: -

2.5 X 8 = 20

- a) What is feeder Pillar and where it is used? Draw installation diagram of a feeder pillar along the main road of a residential colony clearly labeling its different parts.
- b) What is UPS and what is its function in a building?
- c) What is earth resistance and how it is measured? How many types of earth electrodes are used in Internal Electrical installation? Where Plate type electrode is used?

- d) Differentiate between Building area Method and Space Function Method and why they are used?
- e) What is power factor? How it is improved?
- f) What is renewable Energy? How it is tapped in case of an office Building?
- g) What is synchronization of DG Set and how it is achieved?
- h) Describe the earthing requirements of a DG Set installation?

3. Answer the following: -

4 X 5 = 20

- a) What is a compact sub-station? What are its advantages and disadvantages over a conventional sub-station?
- b) What is MCCB and how it is different than MCB?
- c) What are the constructional features of Dry Type Distribution Transformer?
- d) What is vector group, accessories, tap changing device and voltage ratio of a transformer? What are different tests at site before installation of a transformer?
- e) What are different components of a Gas based Fire extinguishing System? What safety precautions are required for such installations?

4. Answer the following:-

- a) Define ARD, Buffer, counter weight and inter communication system of lift. 10
- b) What is escalator and what is the difference between a lift and an escalator installation? 5
- c) What are different tests carried out at site for Testing of Lift installation? 5

5. Answer the following:-

- a) Explain various components with schematic diagram of automatic sprinkler system and the guidelines for its provision in a Multi storey Building as per NBC 2016. 10
- b) What is the function of orifice plate and air vessel in a fire fighting installation of a building? 2
- c) What is fire drill and at what frequency it should be carried out? 2
- d) What are various operational and maintenance requirements of a fire fighting installation in a multistoried building? 2
- e) What are various type of detectors used in fire detection system and where they are used? 2

f) What is manual call box & exit sign?

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6. Explain the following in HVAC system.

2.5 X 8 = 20

- a) Mechanical ventilation and its requirements
- b) Central Heating System
- c) Radiant Cooling System & chilled Beams
- d) Cooling Tower
- e) Variable speed Drive
- f) Design Factors of Central AC plant
- g) Components of Air Handling Unit
- h) Functions of Building Management System
- i) Cold Room