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DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY/ MANAGEMENT/ COMMERCIAL PRACTICE, APRIL-2021

ELECTRICAL POWER UTILIZATION AND SYSTEM PROTECTION

[Maximum marks: 75] (Time: 2.15 Hours)

PART – A

(Answer any ***three*** questions in one or two sentences. Each question carries 2 marks)

I. (1). Define Fusing factor

(2). Mention any two causes of insulation failure of relay.

(3). Define the term conduction.

(4). State scheduled speed.

(5). Define the tem electric traction. (3 x 2 = 6)

PART – B

(Answer any ***four*** of the following questions. Each question carries 6 marks)

II. (1). State any six advantages of fuse.

(2). Mention any six advantages of vacuum circuit breaker.

(3). Name the basic requirements of a protective relay.

(4). State any six advantages of neutral grounding.

(5). Mention the factors affecting the specific energy consumption

(6). Explain the rheostatic breaking in series motor and shunt motor

(7). Explain the mode of heat transfer. (4 x 6= 24)

PART – C

(Answer ***any of the three units*** from the following. Each question carries 15 marks)

UNIT –I

III. (a). With a neat sketch, explain HRC fuse and mention its merits and demerits. (9)

(b). State the difference between fuse and circuit breaker. (6)

OR

IV. (a). With a neat sketch, explain the working and advantages of SF6 circuit breaker (8)

(b). Explain the classification of circuit breaker. (7)

UNIT-II

V. (a). Explain with a neat sketch, the construction and principles of operation of an induction type over current relay. (8)

(b). Explain any two method of neutral earthing (7)

OR

VI. (a). Explain with a neat sketch, the working of Buchhoiz relay (8)

(b). Explain Horn-Gap lightning arrester and write its advantages. (7)

UNIT-III

VII. (a). State and explain the requirement of good heating element of a material (6)

(b). Explain with neat sketch, direct and indirect arc furnace. (9)

OR

VIII.(a).Explain with neat sketch direct and indirect resistance heating (9)

(b).State the applications of dielectric heating. (6)

UNIT-IV

IX. (a). Sketch the speed time curve of electric traction system and explain its different region (8)

(b). Explain the basic requirements of a traction motor (7)

OR

X. (a). An electric train is to have an acceleration and breaking retardation of 0.8km/hr/sec and 3.2km/hr/sec respectively. If the ratio of maximum to average speed is 1.3 and time for stoop is 26 seconds. Find the Scheduled speed for a run of 1.5km. Assume simplified trapezoidal speed time curve (9)

(b). State any six advantages of electric traction (6)

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