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BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – Dip.EE-2022
Course Name – Electrical Installation, Maintenance, Testing
Course Code - DEEPC602
(Semester VI)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Indicate the consequences of an electrical accident.
a) Electric shock b) Fire
c) Both electric shock and fire d) None of these

(ii) Select the value that should be taken as the maximum working value if the measured insulation value is greater than unity.
a) 0.75 MΩ b) 1 MΩ
c) 0.5 MΩ d) 1 Ω

(iii) Select the use of dielectric mineral oil in
a) Small transformers b) Medium transformers
c) Large transformers d) In all transformers

(iv) Tell laminated core is designed to reduce
a) Hysteresis loss b) Eddy current loss
c) Both hysteresis loss and eddy current loss d) Cannot be determined

(v) Indicate the rating of the transformer.
a) kW b) kVAR
c) HP d) kVA

(vi) Identify the wire that is exposed to electric shock.
a) Live b) Neutral
c) Earth d) None of these

(vii) Choose the intensity of an electric shock depending on which factor.
a) The period of shock b) Voltage
c) Type of current d) All of these

(viii) Identify the name of the alloy that is used as an electrical resistance alloy.
a) Nickel alloys b) Nickel chromium alloys
c) Ferro nickel alloys d) All of these

(ix) Choose the correct option: the back emf of a DC motor depends on

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a) Field flux
b) Shape of conductors
c) Type of slip rings
d) Brush material

(x) Examine whether mechanical torque increased if the alternator will

a) Increase the armature current and reduce the power factor
b) Increase the armature current and improve the power factor
c) Decrease the armature current and improve the power factor
d) Decrease the armature current and reduce the power factor

(xi) Judge the expression of the frequency (f) in Hz of a synchronous alternator is given by

a) $f = PN/120$
b) $f = PN/60$
c) $f = P/60N$
d) $f = N/60P$

(xii) Select a conservator in an electrical transformer is used for

a) Protect the transformer from damage when oil expends due to heating
b) Provide fresh air for cooling the transformer
c) Supply cooling oil to transformer in time of need
d) none of these

(xiii) Selecting the option from the following is not true about the SF6 circuit breaker.

a) SF6 gas has excellent insulating property
b) the negative ion is formed when a free electron collides with the SF6 gas molecules, it is absorbed by that gas molecule
c) in the SF6 circuit breaker, the current-carrying contacts operate in the medium sulphur hexafluoride gas
d) SF6 gas has low electro-negativity

(xiv) Select the component of a commercial electrical installation that is responsible for protection against electrical overloads and short circuits.

a) power sockets
b) lighting systems
c) HVAC systems
d) electrical panels or switchgears

(xv) Choose one of the functions of circuit breakers in the substations from the following options:

a) switching equipment control
b) interrupting short-circuits and overload current
c) voltage regulation
d) power generation

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Explain the mandatory conditions of commissioning, testing, and energizing for the substation installation. (3)
3. Define the following terms: (a) Safety (b) Hazard. (3)
4. Discuss about the condition for parallel operation of the alternator. (3)
5. Describe Type test of circuit breakers. (3)
6. Analyze the parameters information is given on the transformer's name plane. (3)

OR

Express the use of potential transformer. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain a short circuit test of the transformer with a neat circuit diagram. (5)
8. Explain why preventive maintenance is needed. (5)
9. Define total preventive maintenance (TPM). Describe procedures for the development of preventive maintenance. (5)
10. Explain how electrical accidents can be prevented. (5)

11. Produce the advantage of the parallel operation of the alternator. Also, write down the conditions of this operation. (5)
12. Explain the properties of insulating oil. (5)

OR

Explain the purpose of earthing in a substation. Distinguish between equipment earthing & resistance earthing. (5)

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