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CCE RF/RR

[ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 8

[Total No. of Printed Pages : 8

[ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 17

[Total No. of Questions : 17

ಸಂಕೇತ ಸಂಖ್ಯೆ : **51**   Code No. : **51**

ವಿಷಯ : ಎಲಿಮೆಂಟ್ಸ್ ಆಫ್ ಎಲೆಕ್ಟ್ರಿಕಲ್ ಇಂಜಿನಿಯರಿಂಗ್ - IV

Subject : ELEMENTS OF ELECTRICAL ENGINEERING-IV

(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ)

(Regular Fresh / Regular Repeater)

ದಿನಾಂಕ : 01. 04. 2025]   [Date : 01. 04. 2025

ಸಮಯ : ಬೆಳಗ್ಗೆ 10-00 ರಿಂದ ಮಧ್ಯಾಹ್ನ 1-15 ರವರೆಗೆ] [Time : 10-00 A.M. to 1-15 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 80]   [Max. Marks : 80

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TEAR HERE TO OPEN THE QUESTION PAPER

General Instructions to the Candidate :

1. This question paper consists of 17 questions.
2. This question paper has been sealed by reverse jacket. ***You have to cut on the right side to open the paper*** at the time of commencement of the examination *(Follow the arrow mark)* **Do not cut the left side to open the paper.** Check whether all the pages of the question paper are intact.
3. Follow the instructions given against the questions.
4. Figures in the right hand margin indicate maximum marks for the questions.
5. The maximum time to answer the paper is given at the top of the question paper. It includes 15 minutes for reading the question paper.
6. Ensure that the Version of the question paper distributed to you and the Version printed on your admission ticket are the same.

Tear here

Note : Answer *all* the questions.

I. **Four alternatives are given for each of the following questions / incomplete statements. Select the most appropriate alternative and write it in the answer book along with its alphabet** : 10 × 1 = 10

1. The S.I. unit of frequency is

   (A)   hertz   (B)   ampere

   (C)   volt   (D)   watt

2. For a sine wave RMS value is

   (A)   0·637   (B)   1·11

   (C)   0·707   (D)   1·414

3. The core of an alternator is made of

   (A)   Brass   (B)   Silicon steel

   (C)   Aluminium   (D)   Copper

4. An A.C. generator converts

   (A) Mechanical energy into DC electrical energy

   (B) Mechanical energy into chemical energy

   (C) Electrical energy into mechanical energy

   (D) Mechanical energy into A.C. electrical energy

5. In step-up transformer

   (A) $N_1 < N_2$ (B) $I_1 = I_2$

   (C) $N_1 > N_2$ (D) $N_1 = N_2$

6. Electrical bell is an example for

   (A) heating effect   (B) lighting effect

   (C) chemical effect   (D) magnetic effect

7. Which of the following is a non-renewable source of energy ?

   (A) Hydroelectric energy   (B) Solar energy

   (C) Nuclear energy   (D) Wind energy

8. Which of the following power plants uses coal ?

   (A)   Solar power plant

   (B)   Nuclear power plant

   (C)   Thermal power plant

   (D)   Hydroelectric power plant

9. An impurity which accepts the electron is called

   (A)   Acceptor impurity

   (B)   Pentavalent impurity

   (C)   Donor impurity

   (D)   Trivalent impurity

10. A pure semiconductor is called

   (A)   Extrinsic semiconductor

   (B)   P-type semiconductor

   (C)   Intrinsic semiconductor

   (D)   N-type semiconductor

II. **Answer the following :**

11. a) Define A.C.   2

    b) Explain the following terms :   3

       i) RMS value

       ii) Frequency

    c) Draw the neat diagram of sine wave and mark the following :

      5

       i) Positive half-cycle

       ii) Amplitude

12. a) Define A.C. Generator.   2

    b) List the types of induced *emf*.   3

    c) Explain the phenomenon of electromagnetic induction.   5

13. a) List the applications of diode.   2

    b) Explain Faraday's law of electromagnetic induction.   3

    c) Draw a neat diagram of squirrel cage rotor induction motor and label the parts.   5

14. a) Define semiconductor. 2

    b) Write any three applications of transformer. 3

    c) Draw a neat diagram of transformer and label the parts. 5

15. a) List the sources of energy. 2

    b) Write short notes on solar power plant. 3

    c) Draw the neat diagram of hydroelectric power plant and label the parts. 5

16. a) Draw the symbolic representation of *N-P-N* transistor. 2

    b) Write the comparison between renewable and non-renewable sources of energy. 3

    c) Draw a neat diagram of electrical fan and label the parts.

    5

17. a) Define doping. 2

   b) Explain the following terms : 3

      i) Average value

      ii) Power factor

   c) Explain with neat sketch forward biasing of diode. 5