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FOR KARNATAKA CLASS 10 PREPARATION

Karnataka SSLC Model Question Paper 2027 for Elements Of Electrical Engineering IV (Paper 1) Key Answers

EXAM	YEAR	TYPE
Karnataka Class 10	2027	Answer Key

51

ಕರ್ನಾಟಕ ಶಾಲಾ ಪರೀಕ್ಷೆ ಮತ್ತು ಮೌಲ್ಯನಿರ್ಣಯ ಮಂಡಲಿ.

6 ನೇ ಅಡ್ಡ ರಸ್ತೆ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560003

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD.

6 th Cross, Malleshwaram Bengaluru-560003

2026-27 ರ ಎಸ್, ಎಸ್, ಎಲ್, ಸಿ. ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ –1

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MODEL ANSWER

OF S S L C MODEL QUESTION PAPER-1:2026-27

ವಿಷಯ : ಎಲಿಮೆಂಟ್ಸ್ ಆಫ್ ಎಲೆಕ್ಟ್ರಿಕಲ್ ಇಂಜಿನಿಯರಿಂಗ್-IV

Subject: ELEMENTS OF ELECTRICAL ENGINEERING –IV

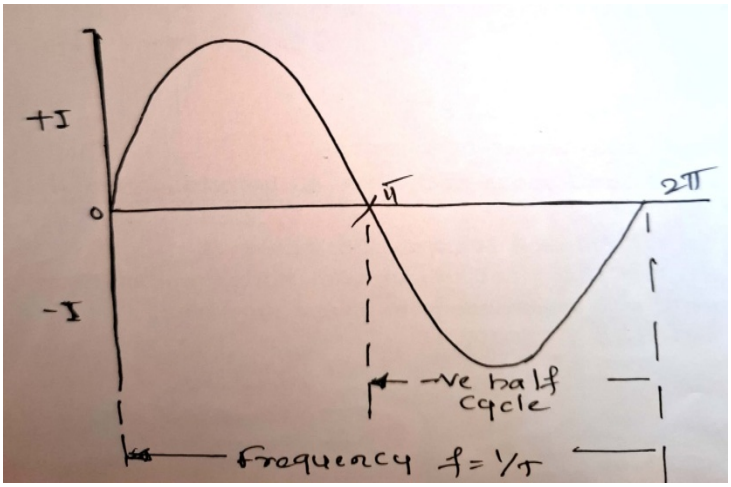
ವಿಷಯ ಸಂಕೇತ : **51** ಗರಿಷ್ಠ ಅಂಕ:**80**

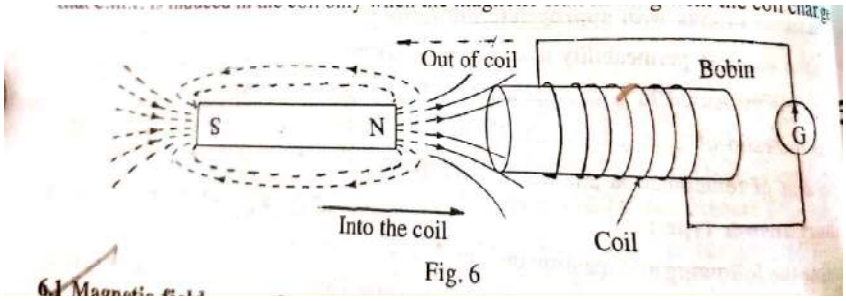
SUBJECT CODE: 51 **MAXIMUM MARKS:80**

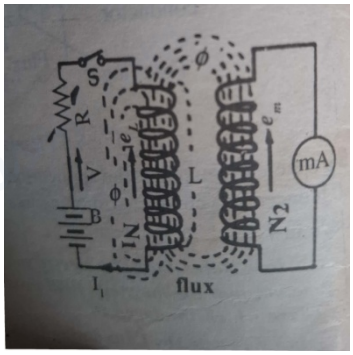
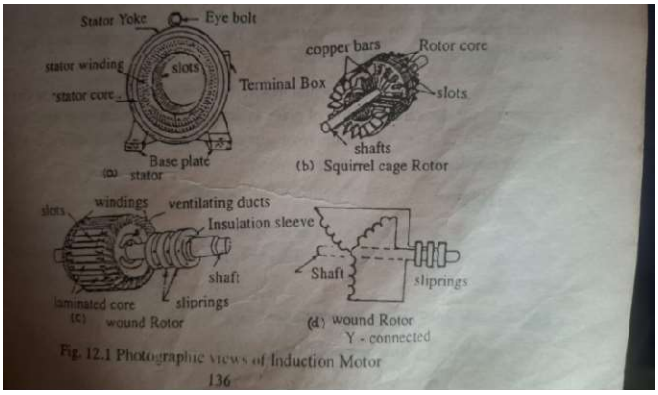
Qn. Nos.	Value Points	Total
I	Four alternatives are given for each of the following questions / incomplete statements. Select the most appropriate alternative and write it in the answer book along with its alphabet	
1	The S I unit of time period is (A) Hertz (B) Seconds (C) Volt (D) Watt **Ans: (B) Seconds**	**1**

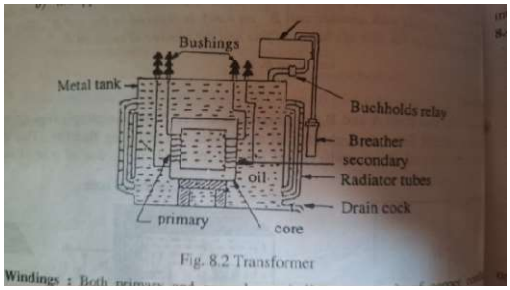
2	For a sine wave Average value is (A) 0.637 (B) 1.11 (C) 0.707 (D) 1.41 **Ans: (A) 0.637**	**1**
3	The core of the alternator is made of (A)Brass (B)Silicon steel (D) Aluminium (D) Copper **Ans: (B) Silicon steel**	**1**
4	An A C Motor converts (A) Mechanical energy in to DC electrical energy (B) Mechanical energy in to chemical energy (C) AC electrical energy into mechanical energy (D) Mechanical energy in AC electrical energy **Ans: (C) AC electrical energy into mechanical energy**	**1**
5	In step up transformer (A) $N_1 > N_2$ (B)$I_1 = I_2$ (C) $N_1 < N_2$ (D) $N_1 = N_2$ **Ans: (C) $N_1 < N_2$**	**1**
6	Electrical heater is an example for (A) Magnetic effect (B)Heating effect (C) Lighting effect (D)Chemical effect **Ans:(B) Heating effect**	**1**
7	Which among the following is a renewable sources of energy (A)Diesel energy (B)Solar energy (C) Nuclear energy (D)Tidal energy **Ans: B) solar energy**	**1**

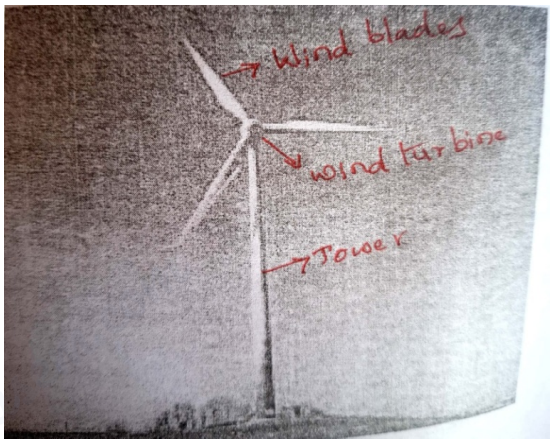
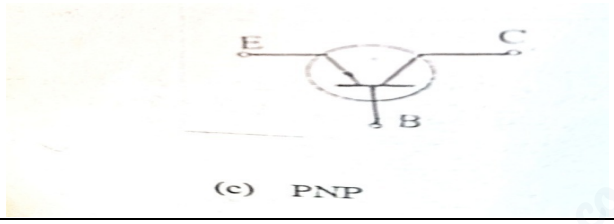
8	Which of the power plant uses water? (A) Hydroelectric power plant (B) Wind power plant (C) Solar power plant (D) Diesel power plant **Ans: (A)Hydroelectric power plant**	**1**
9	An impurity that donates electron is called (A) Acceptor impurity (B)Pentavalent impurity (C) Trivalent impurity (D)Donor impurity **Ans: (D)Donor impurity**	**1**
10	A pure semiconductor is called (A) Extrinsic semiconductor (B) P-type semiconductor (C) Intrinsic semiconductor (D) N-type semiconductor **Ans: (C) Intrinsic semiconductor**	**1**
II	**Answer all the following questions**	
11	a) **A C** :The current whose magnitude and direction varies with respect to time is called alternating current	**2**
	b) **Average value:** When direct current flow through the conductor it transfers charge as transferred by alternating current for the same period of time. I avg :0.637 Vavg:0.637 **Amplitude :** It is the maximum value of an Alternating quantity.	**3**

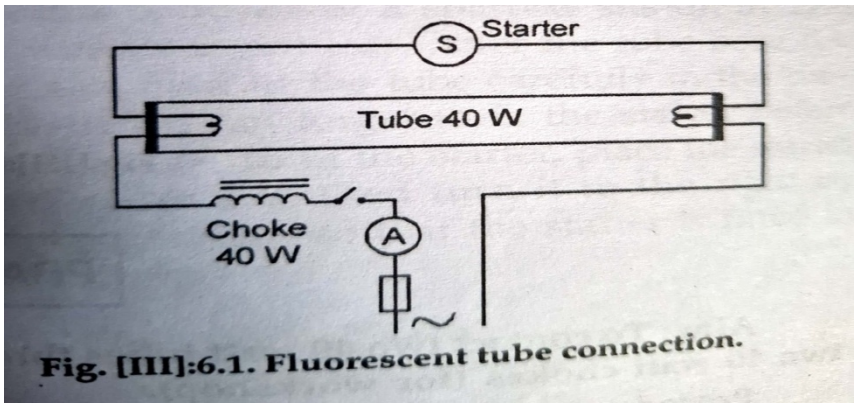
	c) Sine wave  	**5**
12	**a)A C Motor:** It is an electromagnetic machine which converts alternating electrical energy into mechanical energy	**2**
	b) six parts of A C Generator 1. Yoke 2. Eyebolt 3. field pole 4.field winding 4.Armature core 5.Armature winding 6.Bed 7.End shields	**3**

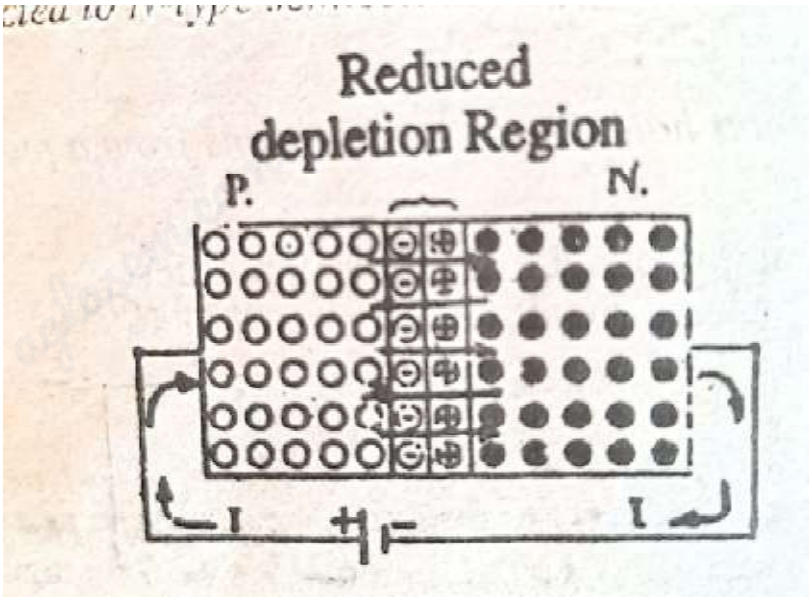
	c) electromagnetic induction  Fig. 6 Changing flux linking with the conductor induces emf this is called electromagnetic induction. Consider a bobbin wound some wires on it and connect both ends of the wire to the galvanometer. When we move the bar magnet in to the bobbin it cuts the magnetic flux and induces emf. The galvanometer deflects in clockwise direction. When we remove the bar magnet from the bobbin again it cuts the magnetic flux and induced emf. The galvanometer deflects in anticlockwise direction. If we keep the bar magnet stationary no flux cut by the conductor induced emf is zero.	**5**

13	**a) Applications of transistor** 1.it is in amplifier 2.it is used as switch 3.it is used in shift oscillators 4. it is used in logical and digital circuits 5.it is used in clipping and clamping circuits	**2**
	b) Mutual induced emf  The emf is induced in the conductor due to Changing flux created by current flow through the neighbouring coil is called mutual induced emf. Consider two coil A and B. when current flow through coil 'A 'it produces magnetic flux,these magnetic glux links with the coil ' B' .and induces emf in coil 'B' only.	**3**
	c) Wound rotor induction motor  Fig. 12.1 Photographic views of Induction Motor 136	**5**

14.	**a) Semiconductor** : it is the property of the material which is a lie between conductor and insulator it is called Semiconductor.	**2**
	b) Applications of transformer 1. it is used in generating stations 2.it is used in substations 3.it is used for distribution purpose 4. Small transformer used is invertors, TV. Mobiles charges And Other electrical and electronic goods	**3**
	c) Diagram of transformer  Fig. 8.2 Transformer	**5**
15	**a)Sources of energy** 1.Renewable sources of energy 2.Non-renewable sources of energy	**2**
	b) Thermal Power Plant: Naturally available coal is made use of as a fuel to heat the water in water boilers. Thus the steam is generated. The high pressure of steam so generated is passed on to steam turbines to run them at high speeds. These turbines in turn rotate electric generators coupled to them which generate electricity. Such generating stations are called as thermal power stations. Ex: Raichur thermal station in karnataka,Ramagundam thermal station in Andrapradesh,Nayveli thermal plant in Tamilnadu,	**3**

	c)Wind power plant  	**5**
16	**a) Symbolic representation of PNP transistor**  (c) PNP	**2**
	b) Difference between renewable and non renewable sources of energy. **Renewable source** / **Non renewable source** Regenerate naturally over a short period. / Cannot be replacedwithin a Human life span take millions of years to form. Regenerate naturally over a short period. / Cannot be replaced within a human lifespan; take millions of years to form. Typically have a lower environmental Impact and carbon footprint. / Often contribute to pollution and environmental degradation through emissions and extraction. Solar, wind, water (hydroelectric), and Geothermal energy. / Fossil fuels like coal, oil, and natural gas, as well as minerals like gold and copper.	**3**

	d) Fluroscent lamp  **Fig. [III]:6.1. Fluorescent tube connection.**	**5**
17	**a) Doping :** The process of adding impurity to the pure semiconductor is called doping	**2**
	b) Time period : The time taken by an alternating quantity to Complete one cycle is called the time period.It is denoted by T. And it is measured in seconds. T = 1/f in seconds **Power factor :** cosine of the angle between applied voltage and Total current of the circuit is called power factor of that circuit. It is a number and is always less than one	**3**

	c) Forward biasing of diode  The positive terminal of the battery is connected to P-type semiconductor and negative terminal of the battery is connected to N-type semiconductor. Then the diode is said to be forward biased. When the diode is forward biased the electrons are repelled by the negative terminal of the battery and holes repelled by the positive terminal of the battery. Thus reduces the potential barrier at the junction. Hence electrons cross the barrier and continue to move to the left through the holes in the p-type material. When valence electrons reach the left end of the crystal they move to the right end of the crystal and flow to the negative terminal of the sources. Thus action constitutes the forward bias current.	**5**