CBSE | DEPARTMENT OF SKILL EDUCATION

ELECTRICAL TECHNOLOGY (SUBJECT CODE – 819)
CLASS XII (SESSION 2021-2022)
BLUE-PRINT FOR SAMPLE QUESTION PAPER FOR TERM -1

Max. Time Allowed: 90 Minutes (1½ Hrs.) **Max. Marks: 30**

PART A - EMPLOYABILITY SKILLS (05 MARKS):

UNIT NO.	NAME OF THE UNIT	NO. OF QUESTIONS (1 MARK EACH)
1	Communication Skills-IV	2
2	Self-Management Skills-IV	2
3	Information and Communication Technology Skills-IV	2
TOTAL QUESTIONS		**6 Questions**
NO. OF QUESTIONS TO BE ANSWERED		**Any 5 Questions**
TOTAL MARKS		**1 x 5 = 5 marks**

PART B - SUBJECT SPECIFIC SKILLS (25 MARKS):

UNIT NO.	NAME OF THE UNIT	NO. OF QUESTIONS (1 MARK EACH)
1.	A.C. Circuits	10
2.	Single-Phase Transformer	13
3.	(A) D.C. Motors (B) Single Phase A.C. Motors	9
TOTAL QUESTIONS		**32 Questions**
NO. OF QUESTIONS TO BE ANSWERED		**25 Questions**
TOTAL MARKS		**1 x 25 = 25 MARKS**

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Max. Time Allowed: 90 Minutes (1½ Hrs.) **Max. Marks: 30**

General Instructions:

1. Please read the instructions carefully
2. This Question Paper is divided into 03 sections, viz., Section A, Section B and Section C.
3. Section A is of 05 marks and has 06 questions on Employability Skills.
4. Section B is of 20 marks and has 25 questions on Subject specific Skills.
5. Section C is of 05 marks and has 07 competency-based questions.
6. Do as per the instructions given in the respective sections.
7. Marks allotted are mentioned against each section/question.
8. All questions must be attempted in the correct order

SECTION A

Answer any 5 questions out of the given 6 questions on Employability Skills (1 x 5 = 5 marks)

1.	Which among the following is not a part of active listening? A. Ask questions. B. Look at who is talking. C. Visualize what is being talked. D. Superficial hearing.	**1**
2.	A resume format that lists your work history in order of when you held each position, with your most recent job listed at the top of the section is called: - A. Chronological resume. B. Functional resume. C. Hybrid resume. D. Nonfunctional resume.	**1**
3.	Ratan is working as branch manager in a leading bank. He avoids meeting with other branch managers due to his over sensitivity to negative criticism and rejection. Identify the common personality disorder involved in this case: A. Schizoid B. Antisocial C. Avoidant D. Paranoid	**1**

4.	Which among the following is not part of the big five personality traits model? A. Extraversion B. Agreeableness C. Conscientiousness D. Ambiversion	**1**
5.	Identify the correct short key sequence for selecting the entire column in the excel spreadsheet. A. Ctrl key+Shift key+down button key B. Down button key+Ctrl key+Shift key C. Down button key+Shift key+Ctrl key D. None of them	**1**
6.	Which function is used to find the minimum of values in the given range of cells? A. COUNT Function B. MIN Function C. MAX Function D. AVERAGE Function	**1**

SECTION B

Answer any 20 questions out of the given 25 questions **(1 x 20 = 20 marks)**

7.	How is the current generated in an A.C. generator? A. No motion observed between the coil and magnet B. Relative motion between the coil and magnet C. Moving the coil and magnet at a uniform velocity. D. Uniform Motion between the coil and magnet	**1**
8.	Cite the principle governing AC generators? A. Faraday's laws of induction. B. Newton's law of conduction. C. Faraday's law of conduction. D. Newton's law of induction.	**1**
9.	Choose the correct option for describing the nature of an AC wave? A. Current changes with time. B. Current is constant with time. C. Current is changing polarity with time. D. Both A and C.	**1**
10.	The type of current provided by a battery is _____? A. Direct Current. B. Alternating Current. C. Sinusoidal Current. D. Square wave current.	**1**
11.	How do we define the period of a wave? A. One complete cycle B. One half cycle C. Time taken to complete one cycle D. Time taken to complete half cycle.	**1**
12.	How is resonance condition achieved in an LCR circuit? A. Impedance is minimum B. Impedance is maximum C. Impedance is constant. D. Impedance is variable.	**1**

13.	What is the principle of a transformer? A. Electromagnetic Conduction. B. Electromagnetic Induction. C. Mutual Conduction. D. Electromagnetic Radiation.	**1**
14.	Write the full form of R.M.S.? A. Root mean square. B. Root mean sine. C. Root minimum square. D. Root maximum square.	**1**
15.	If you want to convert a high voltage into a low voltage, which transformer you will prefer? A. Step up transformer B. Step down transformer C. Hybrid Transformer D. Current Transformer.	**1**
16.	Choose the type of transformer cooling for power stations and substations? A. Oil Natural Air Forced (ONAF) B. Oil Natural Air Natural (ONAN) C. Oil Forced Air Forced (OFAF) D. Oil Forced Air Natural (OFAN)	**1**
17.	Where do we place an Ammeter in a current transformer? A. In primary coil B. In secondary coil C. Both A and B D. In between the poles of a magnet	**1**
18.	Which transformer contains only one winding? A. Voltage transformer. B. Current transformer. C. Auto transformer. D. Hybrid transformer.	**1**
19.	What is the full form of E.M.F.? A. Electro Motion Force B. Electro Magnetic Force C. Electro Motive Force D. Electro Magnetic Field	**1**
20.	DC motor converts _____ energy into _____ energy. A. Electrical to Mechanical B. Mechanical to Electrical C. Electrical to Magnetic D. Magnetic to Electrical	**1**
21.	Match the applications with respective motor type: a. Shunt Motor — i. Elevators b. Series Motor — ii. Blowers and Fans c. Compound Motor — iii. Generally this type of motor is not used d. Differential compound Motor — iv. Rolling Mills	**1**

22.	Why is a starter necessary to operate a D.C. motor? A. To control the ending current up to safe value. B. To control the starting flux up to safe value. C. To control the starting current up to safe value. D. To control the ending flux up to safe value.	**1**
23.	The single-phase AC motor is also termed as _____? A. Magnetic Motor B. Conduction Motor C. Induction Motor D. Compound Motor	**1**
24.	How is the stator different from rotor with reference to a single phase A.C. motor? A. Stator is moving while the rotor is stationary. B. Stator is stationary while the rotor is moving. C. Stator and rotor both are stationary. D. Stator and rotor both are moving	**1**
25.	How is the back EMF and speed of the induction motor related? A. Inversely proportional. B. Directly proportional to the square of speed. C. Directly proportional. D. Directly proportional to the cube of speed.	**1**
26.	_____ force provides the turning effect to the induction motor coil. A. Magnetic forces. B. Couple forces. C. Electrostatic forces. D. Gravitational forces.	**1**
27.	An A.C. generator converts _____ energy into _____ energy? A. Mechanical to Electrical B. Electrical to Mechanical C. Magnetic to Mechanical D. Mechanical to Magnetic	**1**
28.	Which of the given motors have a constant speed? A. Series Motor B. Compound Motor C. Differential Compound Motor D. Shunt Motor	**1**
29.	If we supply a high voltage D.C. to a transformer what will be our observations? A. It will convert high voltage DC into Low voltage DC B. It will convert high voltage DC into Low voltage AC C. It will convert low voltage DC into Low voltage AC D. Both A and B.	**1**
30.	What is the wave pattern of an A.C. wave? A. Tan wave B. Cot wave C. Square wave D. Sine wave	**1**
31.	The torque acting on a coil in a motor can be increased by increasing _____? A. Number of turns B. B (magnetic flux density) C. Force D. Both A and B.	**1**

SECTION C
(COMPETENCY BASED QUESTIONS)

Answer any 5 questions out of the given 7 questions **(1 x 5 = 5 marks)**

Case Study	A Single-phase transformer is essentially an A.C. device. It cannot work on D.C. It changes alternating voltages or currents. It does not affect the frequency of A.C. It is based on the phenomenon of mutual induction. A transformer essentially consists of two coils of insulated copper wire having different number of turns and wound on the same soft iron core. The number of turns in the primary and secondary coils of an ideal transformer are 3000 and 30 respectively. The primary coil is connected to a main supply of 100 V and the secondary coil is connected to a bulb of resistance 0.2 Ω. $$a = \frac{n_1}{n_2} = \frac{V_1}{V_2} = \frac{I_2}{I_1}$$ where: a = turns ratio of transformer n_1 = number of turns on primary n_2 = number of turns on secondary V_1 = primary voltage V_2 = secondary voltage I_1 = primary current I_2 = secondary current	
32.	Which type of transformer is mentioned in the above case study? A. Step Up transformer B. Step Down transformer C. Hybrid Transformer D. Isolation Transformer	**1**
33.	The phenomenon of Mutual Induction is based on which law? A. Faraday's law B. Newton's law C. Galileo's law D. None of the above.	**1**
34.	The value of voltage across the secondary coil is ____? A. 4 Volt B. 3 Volt C. 1 Volt D. 2 Volt	**1**
35.	The value of current in the bulb is_____? A. 5 ohm B. 1 ohm C. 3 ohm D. 4 ohm	**1**

36.	In an ideal transformer as mentioned in the case study the energy losses will be____? A. Maximum B. Minimum C. Zero D. Positive	**1**
37.	If we increase the number of turns in the secondary coil such that number of turns in secondary > number of turns in primary. What will be the change in the performance of the Transformer? A. It will convert to step up transformer B. It will convert to step down transformer C. It will convert to a hybrid transformer D. No change will be observed.	**1**
38.	In which of the coils of a transformer is the AC mains connected? A. Secondary coil B. Both A and B C. In between both the coils. D. Primary coil	**1**