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Roll No. 170941/120941/13041

4TH Sem.

Subject : ELECTRICAL MACHINE-1

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory (10x1=10)

- Q.1 Laminations are used in armature of DC machine to reduce _____ losses. (CO-2)
- Q.2 The commutator segments of DC machines are made up of _____ materiel. (CO-1)
- Q.3 Very small transformers are generally _____ cooled. (CO-9)
- Q.4 Brushes of DC machines are made up of _____. (CO-1)
- Q.5 Working principle of a transformer is _____. (CO-5)
- Q.6 The starting torque of DC series motor is very _____. (CO-2)
- Q.7 Faraday's second law of electromagnetic induction states that _____. (CO-1)

Q.8 Transformer has no _____ losses. (CO-7)

Q.9 The ratio of KW to KVA is known as _____. (CO-8)

Q.10 A 6- Pole, dc wave wound machine will wave _____ parallel paths. (CO-2)

SECTION-B

Note: Very Short answer type questions. Attempt any ten questions out of twelve. 10x2=20

- Q.11 Describe the role of Buchholz relay. (CO-9)
- Q.12 Write working principle of transformer. (CO-5)
- Q.13 What is back emf in DC motor. (CO-2)
- Q.14 Mention any 2 application of DC series motor (CO-2)
- Q.15 Draw equivalent Circuit diagram of single phase Transformer at no load. (CO-5)
- Q.16 Write 2 merits of three phase transformer. (CO-9)
- Q.17 Describe the main function of open circuit test on Transformer. (CO-7)
- Q.18 Describe any two application of three phase transformer. (CO-9)
- Q.19 State flemings right Hand Rule. (CO-1)

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- Q.20 Define Transformation ratio of transformer. (CO-5)
- Q.21 Draw speed current characteristics of DC series motor. (CO-2)
- Q.22 What is the order of magnitude of no load current in a transformer. (CO-5)

SECTION-C

- Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x5=40)
- Q.23 Explain the operation of electrical machine as a generator. (CO-1)
- Q.24 What is the function of commutator in DC machines? (CO-2)
- Q.25 Describe any 5 difference motor action & generator action. (CO-1)
- Q.26 Explain the working of Auto transformer? (CO-6)
- Q.27 Derive e.m.f equation of a transformer. (CO-5)
- Q.28 Explain the differences between power Transformer and distribution transformer. (CO-9)
- Q.29 Why starter is necessary for a DC motor? (CO-3)
- Q.30 Draw and explain transformer phasor diagram for Inductive load? (CO-5)

- Q.31 What do you mean by commutation in a d.c machine? Mention the methods to improving it. (CO-2)
- Q.32 Draw & explain the characteristics of DC shunt motors. (CO-4)

SECTION-D

- Note:** Long answer type questions. Attempt any three questions out of four questions. (3x10=30)
- Q.33 Following data is obtained on a 5KVA 220/440V, 1- Φ transformer.
Open circuit test: 220V, 2A, 100W on L V side.
Short circuit test: 40V, 11.4A, 200W on HV side
Determine full load efficiency at 0.8 pf. (CO-7)
- Q.34 Explain how to determine losses using Swinburne's Test in DC machine. (CO-4)
- Q.35 Explain the construction and working of three point starter with the help of neat diagram.(CO-3)
- Q.36 Define efficiency of transformer Derive the condition for maximum efficiency of transformer. (CO-5)

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**4th Sem. / Electrical/Power station Engg.
/Elect. & Eltx. Engg.**

**Subject : Electrical Measuring Instruments and
Instrumentation**

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Objective type questions. All questions are compulsory. (10x1=10)

(Course Outcome/CO)

- Q.1 Air friction damping is _____ than eddy current damping. (CO-1)
- Q.2 Why Absolute instruments are rarely used? (CO-1)
- Q.3 An ammeter can be converted into a voltmeter by connecting _____ in series. (CO-2)
- Q.4 In PMMC instruments, the scale is _____. (CO-2)
- Q.5 Creeping in energy meters can be prevented by providing _____. (CO-4)
- Q.6 Meggar is used for measurement of _____ resistance. (CO-5)
- Q.7 The maximum value of power factor is _____. (CO-5)

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- Q.8 Define power factor. (CO-8)
- Q.9 LVDT has _____ secondaries. (CO-9)
- Q.10 Platinum has a _____ temperature coefficient of resistance. (CO-10)

SECTION-B

Note:Very Short answer type questions. Attempt any ten question out of twelve questions. (10x2=20)

- Q.11 Define secondary instruments? (CO-1)
- Q.12 Why we need damping torque?. (CO-1)
- Q.13 Write two types of moving iron instruments. (CO-2)
- Q.14 The meter used for measuring potential difference of a circuit is called _____. (CO-2)
- Q.15 The energy meters are called _____ instruments. (CO-4)
- Q.16 What is an instrument transformer? (CO-5)
- Q.17 What is the function of a phase sequence indicator. (CO-5)
- Q.18 Where we used the synchroscope?. (CO-5)
- Q.19 DMM stands for _____. (CO-6)
- Q.20 Why delay line used in CRO?. (CO-6)
- Q.21 What do you mean by polyphase system. (CO-8)
- Q.22 $KW = KVA \times$ _____. (CO-8)

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SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x5=40)

Q.23 Write the short note on Thermocouple? (CO-10)

Q.24 What are transducers? Mention the advantages of converting all physical quantities into electrical signal for measurements. (CO-9)

Q.25 Describe three wattmeters methods for measurement of power in a three phase circuit. (CO-8)

Q.26 What are LCR meters and explain their application. (CO-7)

Q.27 Discuss construction & working of dynamometer type frequency meter. (CO-5)

Q.28 Explain the construction & working of maximum demand indicator. (CO-4)

Q.29 What are the phase and speed errors in induction type energy meter and how these can be adjusted? (CO-4)

Q.30 Discuss working principal and demerits of dynamometer type wattmeter. (CO-3)

Q.31 Write five differences between ammeters and voltmeters? (CO-2)

Q.32 What are the essentials of an indicating instrument? (CO-1)

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. (3x10=30)

Q.33 Explain the construction & working of earth tester with sketch. (CO-5)

Q.34 Draw block diagram for CRO and list function of various block. Also write five application of CRO. (CO-6)

Q.35 Discuss the construction and working of PMMC type instruments with neat sketch. Also write advantage and disadvantages (CO-2)

Q.36 Write short note on- (CO-1)

1. Indicating and recording instruments.
2. Errors in measurements.

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4th Sem. / Electrical Engg.

Subject : Utilization of Electrical Energy

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Objectives type questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

- Q.1 _____ heating is used in gluing and bonding of woods. (CO-2)
- Q.2 TIG stands for _____. (CO-3)
- Q.3 Electroplating is an example of deposition (T/F) (CO-4)
- Q.4 The Capacity of the Air Conditioner is given in _____. (CO-5)
- Q.5 _____ motor has high starting Torque (CO-6)
- Q.6 In Electric Traction _____ is used to collect the current from overhead conductor. (CO-7)

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Q.7 EMV stands for _____ (CO-7)

Q.8 Induction furnaces can only work on _____ supply. (CO-2)

Q.9 For small domestic appliances _____ motors are generally used. (CO-6)

Q.10 Define welding _____. (CO-3)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts 10x2=20

- Q.11 Define Resistance Heating. (CO-2)
- Q.12 Define Galvanisation. (CO-4)
- Q.13 Write any two application of spot welding. (CO-3)
- Q.14 Define Air Conditioning. (CO-5)
- Q.15 Define Bett Drive. (CO-6)
- Q.16 Enlist the two advantages of Electric traction. (CO-7)
- Q.17 Define plugging (CO-7)
- Q.18 Name the types of electrodes used in arc furnaces. (CO-2)

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- Q.19 Define anodizing (CO-4)
- Q.20 Why the D.C. motors are mostly gear motors. (CO-6)
- Q.21 Define group Drive. (CO-6)
- Q.22 Define scheduled speed of train. (CO-7)

SECTION-C

Note: Short answer type questions. Attempt any eight questions. 8x5=40

- Q.23 Explain the application of Dielectric-heating (CO-2)
- Q.24 Explain any five advantages of electric heating. (CO-2)
- Q.25 Differentiate between A.C. and D.C. welding (CO-3)
- Q.26 Explain the Faraday's Laws of Electrolysis (CO-4)
- Q.27 Enlist the essential qualities of a good refrigerant used in refrigeration. (CO-5)
- Q.28 Explain any five advantages of Electric drives. (CO-6)

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- Q.29 Explain Regenerative Breaking. (CO-6)
- Q.30 Describe the various types of Railway Services. (CO-7)
- Q.31 Differentiate between group drive and individual drive. (CO-6)
- Q.32 Explain seam welding. (CO-3)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.33 Discuss the mechanical features to be considered in the selection of a motor for particular service.
- Q.34 Draw the block diagram of electric locomotive and explain various equipments / accessories.
- Q.35 Explain microwave heating describe the field of application of microwave heating.
- Q.36 Describe the various factors governig Electro-Deposition.

(**Note:** Course outcome/CO is for office use only)

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4th Sem. / Electrical Engg.

Subject : ELECTRICAL ENGINEERING

DESIGN AND DRAWING -II

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: All questions are compulsory.

- Q.1 a) What is Earthing. (CO-2) 2 Marks
- b) What are the equipments to be earthed. (CO-2) 3 marks
- c) What are the methods of reducing earth resistance. (CO-2) 5 marks
- d) Explain Time Delay relay with the help of Diagram. (CO-1) 5 marks
- Q.2 Draw the Schematic and wiring diagram of a sequential operation of Two Motors using Time Delay relay. (CO-1) 25 marks

Draw the Schematic and wiring diagram of Two speed control of three phase Induction motor (CO-1)

- Q.3 Draw Key diagram of 33KV substation. (CO-4) 20 marks
- Q.4 Explain plate earthing with the help of neat sketch. (CO-2) 20 marks
- Q.5 a) Explain the following AUTOCAD command (CO-5) 10 marks
- i) Erase
 - ii) Extend
 - iii) Mirror
 - iv) Move
- b) Draw the schematic diagram for lighting system for Theatre or indoor sports stadium. (CO-5) 10 marks

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4th Sem. / Electrical
Subject : Digital Electronics

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory. (10x1=10)

(Course Outcome/CO)

- Q.1 Name of NAND gate IC. (CO-3)
Q.2 Define Bit. (CO-1)
Q.3 Draw the symbol of NOR Gate. (CO-3)
Q.4 Find I's complement of 10101010. (CO-1)
Q.5 Define parity. (CO-1)
Q.6 $A+A=$ _____. (CO-4)
Q.7 What is minterm. (CO-6)
Q.8 Name any one mux IC. (CO-7)
Q.9 Define latch. (CO-8)

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Q.10 MOD is counter requires _____ FFS. (CO-10)

SECTION-B

Note: Very Short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

- Q.11 Write any two advantages of digital signals. (CO-1)
Q.12 Convert $(101.01)_2$ into decimal. (CO-1)
Q.13 Simplify $A\bar{B}C + A\bar{B}\bar{C}$. (CO-4)
Q.14 Give two applications of flip flop. (CO-8)
Q.15 Write the binary Equivalent of $(346EA)_{16}$ (CO-1)
Q.16 Draw truth table of full adder. (CO-7)
Q.17 Explain Demorgan's theorms. (CO-5)
Q.18 Draw a simple schetmatic of SIPO register (CO-10)
Q.19 Define UP counter. (CO-10)
Q.20 What is resolution? (CO-9)
Q.21 Define accuracy. (CO-9)
Q.22 Expand RAM. (CO-10)

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SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. 8x5=40

- Q.23 Explain in brief the need of digitization. (CO-1)
- Q.24 Why NAND and NOR gate are called universal gates?. (CO-1)
- Q.25 Simplify the following expression. (CO-4)
 $Y = AB + A(B+C) + B(B+C)$
- Q.26 Draw the truth table and diagram of 8:1 multiplexer. (CO-7)
- Q.27 Describe the working of serial In serial out shift register. (CO-10)
- Q.28 Differentiate between synchronous and asynchronous counter. (CO-10)
- Q.29 Explain the operation of D flip flop with diagrams. (CO-8)
- Q.30 Explain successive approximation A/D converter. (CO-9)
- Q.31 Differentiate between RAM and ROM. (CO-10)

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- Q.32 Explain about the digital display devices.(CO-7)

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. (3x10=30)

- Q.33 What is an Encoder? Write in detail about decimal to BCD Encoder. (CO-7)
- Q.34 Minimize the following Expression by Using K-map.

$$F(A,B,C,D) = \sum m(0,1,2,5,7,13,14) + \sum d(3,6,9) \quad (\text{CO-6})$$

- Q.35 Explain the following:-
- (a) 2's Complement method. (CO-2)
 - (b) D/A Converters. (CO-9)
- Q.36 Discuss about the following:-
- (a) R-S flip flop. (CO-8)
 - (b) Applications of memory.. (CO-10)

(Note: Course outcome/CO is for office use only)

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