

# GOVERNMENT POLYTECHNIC ,BARGARH

## Department Of Electrical Engineering

Semester: 4<sup>th</sup>. DIPLOMA  
 Subject: E.C-I  
 Branch: Electrical Engineering

Session: 2023(Summer)  
 No of Period : 75 (60 L+ 15 T)  
 Name of Faculty: NITESH KU. ACHARYA

| Period | Date       | Topic to be covered  |
|--------|------------|--|
| 1      | 13.02.2023 | <b>D.C. GENERATOR:</b><br>Operating principle of generator   |
| 2      | 14.02.2023 | Constructional features of DC machine.   |
| 3      | 15.02.2023 | Yoke, Pole & field winding, Armature, Commutator.  |
| 4      | 16.02.2023 | Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch.  |
| 5      | 17.02.2023 | Recall & discussion of class 1 to 4  |
| 6      | 20.02.2023 | Simple Lap and wave winding, Dummy coils.  |
| 7      | 21.02.2023 | Different types of D.C. machines (Shunt, Series and Compound)  |
| 8      | 22.02.2023 | Derivation of EMF equation of DC generators. (Solve problems)  |
| 9      | 23.02.2023 | Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems.                            |
| 10     | 24.02.2023 | Recall & discussion of class 6 to 9  |
| 11     | 27.02.2023 | Armature reaction in D.C. machine  |
| 12     | 28.02.2023 | Commutation and methods of improving commutation.  |
| 13     | 01.03.2023 | Role of inter poles and compensating winding in commutation. Characteristics of D.C. Generators.                           |
| 14     | 02.03.2023 | Application of different types of D.C. Generators. Concept of critical resistance and critical speed of DC shunt generator |
| 15     | 03.03.2023 | Recall & discussion of class 11 to 14  |
| 16     | 06.03.2023 | Conditions of Build-up of emf of DC generator.   |



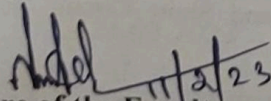
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| 17 | 09.03.2023                       | Parallel operation of D.C. Generators<br>Uses of D.C generators.  |
| 18 | 10.03.2023                       | <b>D. C. MOTORS:</b><br>Basic working principle of DC motor   |
| 19 | 11.03.2023<br>(9:00 am-10:00 am) | Significance of back emf in D.C. Motor.   |
| 20 | 13.03.2023                       | Recall & discussion of class 16 to 19   |
| 21 | 14.03.2023                       | Voltage equation of D.C. Motor and condition for maximum power output (simple problems)                     |
| 22 | 15.03.2023                       | Derive torque equation (solve problems)   |
| 23 | 16.03.2023                       | Characteristics of shunt, series and compound motors and their application.                                 |
| 24 | 17.03.2023                       | Starting method of shunt, series and compound motors.   |
| 25 | 18.03.2023<br>(9:00 am-10:00 am) | Recall & discussion of class 21 to 24   |
| 26 | 20.03.2023                       | Speed control of D.C shunt motors by Flux control method.<br>Armature voltage Control method.               |
| 27 | 21.03.2023                       | Solve problems of Speed control of D.C shunt motors.  |
| 28 | 22.03.2023                       | Determination of efficiency of D.C. Machine by Brake test method.   |
| 29 | 23.03.2023                       | solve numerical problems on determination of efficiency.  |
| 30 | 24.03.2023                       | Recall & discussion of class 26 to 29   |
| 31 | 25.03.2023<br>(9:00 am-10:00 am) | Determination of efficiency of D.C. Machine by Swinburne's Test method.                                     |
| 32 | 27.03.2023                       | solve numerical problems of Swinburne's Test method.  |
| 33 | 28.03.2023                       | Losses, efficiency and power stages of D.C. motor.  |
| 34 | 29.03.2023                       | solve numerical problems on Losses, efficiency and power stages of D.C. motor. Uses of D.C. motors          |
| 35 | 31.03.2023                       | Recall & discussion of class 31 to 34   |
| 36 | 03.04.2023                       | <b>SINGLE PHASE TRANSFORMER: -</b><br>Working principle of transformer.                                     |
| 37 | 04.04.2023                       | Constructional feature of Transformer.<br>Arrangement of core & winding in different types of transformers. |
| 38 | 05.04.2023                       | Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.      |

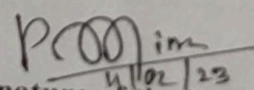


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| 39 | 06.04.2023                       | Explain types of cooling methods.   |
| 40 | 08.04.2023<br>(9:30 am-10:00 am) | Recall & discussion of class 36 to 39   |
| 41 | 10.04.2023                       | State the procedures for Care and maintenance.  |
| 42 | 11.04.2023                       | EMF equation of transformer.  |
| 43 | 12.04.2023                       | Ideal transformer voltage transformation ratio.   |
| 44 | 13.04.2023                       | Operation of Transformer at no load, on load with phasor diagrams.  |
| 45 | 15.04.2023<br>(4.30 pm-5.30 pm)  | Recall & discussion of class 41 to 44   |
| 46 | 18.04.2023                       | Equivalent Resistance, Leakage Reactance and Impedance of transformer.  |
| 47 | 19.04.2023                       | To draw phasor diagram of transformer on load   |
| 48 | 20.04.2023                       | Phasor diagram of winding Resistance and Magnetic leakage with using unit pf, leading pf and lagging pf load. |
| 49 | 21.04.2023                       | To explain Equivalent circuit and solve numerical problems.   |
| 50 | 22.04.2023<br>(4.30 pm-5.30 pm)  | Recall & discussion of class 46 to 49   |
| 51 | 24.04.2023                       | Approximate & exact voltage drop calculation of a Transformer.  |
| 52 | 25.04.2023                       | Regulation of transformer.  |
| 53 | 26.04.2023                       | Different types of losses in a Transformer.   |
| 54 | 27.04.2023                       | Explain Open circuit and Short Circuit test. (Solve numerical problems)                                       |
| 55 | 28.04.2023                       | Recall & discussion of class 51 to 54   |
| 56 | 29.04.2023<br>(4.30 pm-5.30 pm)  | Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency.        |
| 57 | 01.05.2023                       | solve problems on efficiency of transformer.  |
| 58 | 02.05.2023                       | Explain All Day Efficiency (solve problems).  |
| 59 | 03.05.2023                       | Determination of load corresponding to Maximum efficiency.  |
| 60 | 04.05.2023                       | Recall & discussion of class 56 to 59   |
| 61 | 06.05.2023(4.30 pm-5.30 pm)      | Parallel operation of single-phase transformer.   |
| 62 | 08.05.2023                       | <b>AUTO TRANSFORMER:</b><br>Constructional features of Auto transformer.                                      |
| 63 | 09.05.2023                       | Working principle of single-phase Auto Transformer.   |
| 64 | 10.05.2023                       | Comparison of Auto transformer with a two-winding transformer.  |



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| 65 | 11.05.2023                  | Recall & discussion of class 61 to 64   |
| 66 | 12.05.2023                  | saving of Copper of Auto-transformer.   |
| 67 | 13.05.2023(4.30 pm-5.30 pm) | Uses of Auto transformer.   |
| 68 | 15.05.2023                  | Explain Tap changer with transformer.   |
| 69 | 16.05.2023                  | On load and Off load Tap Changer.   |
| 70 | 17.05.2023                  | Recall & discussion of class 66 to 69   |
| 71 | 18.05.2023                  | <b>INSTRUMENT TRANSFORMERS:</b><br>Explain Current Transformer and Potential Transformer. |
| 72 | 20.05.2023(4.30 pm-5.30 pm) | Define Ratio error, Phase angle error, Burden.  |
| 73 | 22.05.2023                  | Uses of C.T. and P.T.   |
| 74 | 23.05.2023                  | Discussion on C.T. & P.T.   |
| 75 | 23.05.2023(4.30 pm-5.30 pm) | Recall & discussion of class 71 to 74   |

  
 Signature of the Faculty

  
 Signature of the HOD