

CHAPTER – 1
METRIC AND ENGLISH SYSTEM

Objective questions

1. CGS System means _____
2. MKS System means _____
3. FPS System means _____
4. CGS & MKS system are _____ Systems.
5. FPS is a _____ Systems.
6. SI unit correspond to _____ Systems.
7. 1 inch = _____ Cm
8. 1 C.M = _____ mm.
9. 1m = _____ Cm
10. 1 km = _____ m.
11. 1 micron = _____ m.
12. Area of a rectangle is _____
13. Area of a triangle is _____
14. A unit of area is _____
15. Volume is expressed in _____
16. 1 Gallon is _____ Liter.
17. 1 Liter is _____ CC.
18. Units of weight are _____
19. 1 Kg is _____ Pound.
20. 1 Metric tonne is _____ Kgs.
21. 1 Quintal is _____ Kgs.
22. Unit of Pressure _____
23. 1 Atmospheric Pressure is _____ PSI.
24. 1 Kg / cm² is _____ PSI
25. 1 Atmospheric pressure is _____ Kg / cm²
26. 1 Metric H.P. is _____ Watts.
27. 1 Kg. is equal to _____ Grams.
28. 1 KW _____ Watts.
29. Formula for converting ⁰F to ⁰C is = _____
30. Formula for converting ⁰C to ⁰F is = _____

CHAPTER – III
IDENTIFICATION AND USAGE OF ELECTRIC HAND TOOLS

1. Type of Pliers used for electrical work are _____, _____, _____
2. The wooden hammer is known as _____.
3. The tenon saw cut the wood in _____ direction.
4. _____ No of edge available in electrician knife.
5. Small screwdrivers are called _____.
6. _____ is used for fix the wiring exactly vertical position while doing wiring.
7. _____ is used to hold pipes while threading.
8. _____ is used to remove / tighten a thread pipe.
9. _____ is used to measure the diameter of the copper wire.
10. _____ Caliper measure and accuracy of 0.02 mm.
11. _____ Caliper is used measure out side diameter of the pipe.
12. _____ Caliper is used measure in side diameter of the pipe.
13. _____ is used to measure the single phase supply.
14. _____ saw is used to cut the thick wood.
15. _____ saw is used to cut the thin wood
16. _____ saw is used to cut the conduit and GI pipes.
17. _____ is used for chipping and scrapping unwanted wood.
18. _____ Stone is used for sharpen.
19. _____ is used to drill hole in the wooden piece.
20. _____ is used to make hole on wall to fix pipe used for wiring..
21. _____ hammer is generally used for electrical application.
22. _____ tool is used for soldering.
23. _____ tool is used to check the object in plane or perpendicular.
24. _____ is used for cutting insulation papers for winding.
25. _____ is used for cutting tin sheets.
26. _____ is used to measure the length of wire required for wiring.
27. _____ is used to smoothen the surface of the metal piece.
28. _____ is used to measure the wire gauge.

29. _____ is used to remove the pulley from the shaft of the motor.
30. _____ is used to test 3-phase supply.
31. _____ tool is used to cut the copper pipe for AC application.
32. _____ tool is used to bend the copper pipe for AC application.
33. _____ is for making joints in a copper pipe.
34. _____ is used to remove the nut from the bolt.
35. _____ can be used to remove various size of bolts.
36. _____ is used to make a guide hole for screws in wooden piece.
37. _____ is used for discharging HT supply.

CHAPTER – IV
ELECTRICAL MEASUREMENT AND MEASURING INSTRUMENTS

1. _____ meter is used to measure the current in a circuit
2. _____ meter is used to measure milli ampere.
3. $1 \text{ mA} = \underline{\hspace{2cm}} \text{ A}$.
4. Ammeter should be connected in _____ with the circuit.
5. _____ meter is used to measure the current in a circuit without disconnecting the connections.
6. _____ type of clip on ammeter is used to measure the battery current.
7. _____ ammeter is used for battery charging / discharging panel.
8. _____ is used along with DC ammeter for measuring high DC current.
9. _____ is used along with AC ammeter to measure higher current.
10. _____ is used to measure voltage in a circuit.
11. Voltmeter should be connected in _____ with the circuit.
12. _____ is used along with voltmeter to measure HT voltage.
13. $1 \text{ mV} = \underline{\hspace{2cm}} \text{ V}$.
14. _____ is used to measure resistance.
15. _____ is used to measure the insulation resistance of a motor.
16. _____ is used to measure the earth resistance.
17. _____ is used to check the condition of bearing.
18. _____ is used to check the specific gravity of battery electrolyte.
19. _____ is used to measure light intensity.
20. _____ is used to measure the temperature.
21. _____ is used to measure the pressure in an AC system.
22. _____ is used to measure humidity.
23. _____ instrument is used to see the waveform of a signal.
24. _____ instrument is used to check the speed of the motor.
25. _____ is used to measure the frequency of a sine wave.
26. _____ is used to create vacuum in an AC plant.
27. _____ meter is used to measure power consumed by a load.
28. _____ meter is used to measure electrical energy.
29. State electricity boards are providing _____ meters in industrial consumers for monthly meter reading.
30. _____, _____, _____ & _____ meters are available in a tri-vector meter.
31. _____ meter is used to measure power factor in an electrical circuit.
32. _____ thermometer is used to measure the temperature of a substance without contact.
33. _____ meter is used to measure the temperature of an oven.

CHAPTER –V
CELLS AND BATTERIES

1. _____ is an Electro chemical device.
2. _____ cell can't be recharged.
3. _____ cells can be recharged.
4. Group of cells is called _____
5. The liquid filled inside a lead acid battery is called _____
6. The positive plate of a fully charged lead acid battery is _____
7. The negative plate of a fully charged lead acid battery is _____
8. The electrolyte used in lead acid cell is _____
9. The container of a lead acid cell is _____ or _____
10. _____ is used to avoid short circuit between + ve & -ve plates inside a cell.
11. The gas inside a lead acid cell escapes through _____
12. When 3 lead acid cells are connected in series the total voltage is _____
13. Gassing inside a battery starts when it is _____
14. Rated voltage of a lead acid cell is _____
15. Rated voltage of a dry cell is _____
16. The capacity of a lead acid cell is denoted in _____
17. The capacity of battery used in TL application _____ AH.
18. The capacity of battery used for under slung AC coaches is _____ AH.
19. Capacity of battery used for RMPU coaches is _____
20. The specific gravity of a fully charged 120Ah TL battery will be _____
21. The specific gravity of a fully charged 800Ah battery will be _____
22. Flooded battery shouldn't be discharged below. _____ specific gravity.
23. The flooded battery shouldn't be discharged below. _____ V.
24. _____ is applied on the inter cell connections to avoid sulphation.
25. For initial charging of 120 AH TL battery, charging current is _____ A.
26. The reference temperature taken or battery charging is _____ °C
27. _____ water is used for preparing electrolyte with acid.
28. _____ to be added with _____ while preparing electrolyte.
29. _____ type of charging used to change flooded battery during POH.
30. Chemical name for sulfuric acid is _____.
31. When 3-lead acid battery of 120 AH connected in parallel the total voltage is _____ total AH is _____.
32. RMPU coaches use _____ type of battery.
33. _____ and _____ gases are emitted from a fully charged lead acid battery.
34. _____ cells are tested during trip attention.
35. Specific gravity of distilled water is _____
36. Specific gravity of concentrate acid is _____.
37. VRLA battery works in the principle of _____.
38. The type of separator used in VRLA battery is called _____.
39. The recommended float voltage of a VRLA cell is _____ V.
40. The recommended boost voltage of a VRLA cell is _____ V.

CHAPTER – VI
TRAINLIGHTING SYSTEM

1. The work voltage of self generated TL coaches _____
2. _____ type of Alternator is used for TL application
3. The capacity of alternator used for BG TL coach is _____.
4. In the stator of the brush less alternator _____ & _____ winding are available.
5. _____ Voltage to be applied to the field of an alternator.
6. _____ magnetism will retain in the stator when field winding of alternator is excited by a DC voltage once.
7. The axle pulley diameter is _____ mm PCD.
8. The alternator pulley diameter is _____ mm PCD.
9. The 'V' belt size used in alternator _____
10. Diode is used as a _____
11. _____ is the heart / rectifier cum regulator
12. _____ is used to sense the current in the 4.5 KW alternator.
13. ET is a _____
14. _____ diode is used in a DT?
15. _____ rectifier is used in regulator cum rectifier.
16. Field fuse used in a 4.5 kW rectifier cum regulator is _____ A
17. Main fuse used in a 4.5 kW rectifier cum regulator is _____ A.
18. _____ mm fan is used in Train lighting.
19. The wattage a 400-mm sweep fan is _____
20. The make of carbon brushes are _____, _____, _____
21. The wear limit mark of the carbon brush is _____ mm.
22. Minimum illumination level of a 1st class coach with IC lamp is _____ Lux
23. The illumination level of 1st class couch with FL lamp is _____ Lux.
24. Minimum illumination level of a II class coach with IC lamp is _____ Lux.
25. Minimum illumination level of a II class coach with FL lamp is _____ Lux.
26. The wattage of lamps used in TL coach is _____, _____, _____.
27. The wattage of CFL used in TL coach is _____ W.
28. Size of wire used for TL wiring under frame _____ sq.mm
29. The MCB used for L1 circuit is _____ A.
30. The MCB used for L2 circuit is _____ A.
31. The MCB used for F1 circuit is _____ A.
32. The MCB used for SPM Circuit is _____ A.
33. The HRC fuse used for TL battery supply is _____ A.
34. The HRC fuse used in – VE FCJB is _____ A.
35. The SWG fuse wire used for lighting / fan is _____
36. The wire size used for TL fan / light _____ sq.mm
37. The wire size used for L1 circuit is _____ sq.mm
38. The wire size used for regulator to battery is _____ sq.mm.
39. The wire size used for alternator to regulator is _____ sq.mm.
40. Air Clearance of _____ mm is specified between any live part & coach body in a 110 V TL coach.
41. Minimum Air between + VE & -VE wire of TL coach wiring is _____ mm
42. _____ types of fuse wires are used for rewirable fuses in TL coaches.
43. _____ type of test lamp is used to identify coach earth.
44. The maximum voltage drop in a 110 TL coach is _____ V.

CHAPTER – VII

AIR CONDITIONING & REFRIGERATION

1. Matter exists in three different states they are _____, _____, _____
2. Pressure is defined as _____
3. Unit of pressure is _____
4. Atmospheric pressure is _____ PSI
5. Refrigeration means _____
6. Sensible heat is defined as _____
7. Freezing points is defined as _____
8. Latent heat is defined as _____
9. Boiling point is defined as _____
10. Boiling point of water is ⁰C _____
11. BTU is defined as _____
12. K cal is defined as _____
13. Ton of refrigeration means _____
14. The basic parts of a refrigeration system is _____, _____
15. The refrigerant used in under slung AC System is _____
16. The refrigerant used in RMPU AC is _____
17. The refrigerant used in refrigerator is _____
18. The refrigerant used in water cooler is _____
19. The refrigerant used in bottle cooler is _____
20. The function of a brush less alternator _____
21. The capacity of brush less Alternator used in AC coaches are _____
_____ & _____
22. _____ & _____ windings are available in stator of the Alternator.
23. Rotor construction of brush less alternator is _____ & _____
24. When a field is excited by a battery _____ magnetism is maintained.
25. The out put voltage of a Alternator depends upon _____ & _____
26. The size of the 'V' belt used in Alternator is _____
27. The full compliment of 'V' belt in Alternator AC coach is _____ nos
28. The rated current of 25 KW Alternator is _____ amps.
29. The function of rectifier cum regulator is _____ & _____
30. Converting AC to DC is called _____
31. _____ is the heart of rectifier cum regulator
32. The function of DT is _____
33. In DT _____ diode is used.
34. _____ diode will protect the MA from voltage surges from the field.
35. The field fuse used in a rectifier cum regulator is _____ amps
36. Battery means _____
37. For a fully charged 800 Ah cell the specific gravity will be _____
38. A lead acid cell can be discharged up to _____ specific gravity.
39. A lead acid cell can be discharged up to _____ voltage
40. _____ meter is used to check the specific gravity.

41. _____ is applied in the inter cell and end cell connection to avoid corrosion.
42. Level of electrolyte reduces in the cell after a trip is due to _____
43. _____ battery has got less maintenance.
44. The function of the pre-cooling transformer is to _____
45. The pre-cooling transformer converts _____ V to _____ V.
46. _____ & _____ control is used control the output of the pre cooling transformer.
47. The capacity of the pre-cooling transformer is _____ A
48. The function of an inverter in a RMPU coach is _____
49. The temperature setting of cooling pilot relay is _____
50. The temperature setting of heating pilot relay is _____ & _____ degree
51. The direction of rotation of a 3-phase induction motor can be changed by _____
52. The function of compressor is _____
53. The function of evaporator is _____
54. The function of expansion valve is _____
55. The capacity of 1 PCA in RMPU coach is _____ ton.
56. The formula for converting in degree Fahrenheit to degree centigrade is _____
57. The LP cut out in RMPU coach is _____ PSI.
58. The HP cut out in RMPU coach is _____ PSI.
59. The LP cut out in under slung coach is _____ PSI.
60. The HP cut out in under slung coach is _____ PSI.

CHAPTER – VIII

Basic Electricity, Knowledge about about AC/DC motors , windings

1. Smallest particle of an element is called
2. The particles of an atom are _____
3. The charge of electron is _____
4. The charge of proton is _____
5. The charge of neutron is _____
6. Current means _____
7. Voltage means _____
8. Resistance means _____
9. Unit of current is _____
10. Unit of Voltage is _____
11. Unit of resistance is _____
12. $V = IX$ _____
13. $I = V /$ _____
14. $R =$ _____ / I.
15. Unit of power is _____
16. Unit of energy is _____
17. Supply from battery is a _____ type of supply.
18. The voltage of a single-phase supply is _____ V.
19. The voltage of 3-phase supply is _____ V.
20. The wires of a single-phase supply are _____ & _____
21. The two wires of a DC supply are _____ and _____.
22. The four wires of a 3-phase supply are _____ ,
_____ & _____
23. In single-phase supply Phase to Neutral voltage is _____ V.
24. In single –phase supply phase to Earth voltage is _____ V.
25. In single-phase supply Earth to Neutral voltage is _____ V.
26. In 3-phase supply Phase to Phase voltage is _____ V.
27. 11KV = _____ V.
28. The frequency of supply available in India is _____ Hz.
29. Examples for conductors are _____, _____ & _____.
30. Examples for insulator are _____, _____ & _____.
31. Types of DC motors are -----,-----,-----
32. Types of AC motors are -----, -----, -----
33. Types of starters used for 3 phase motors are -----,-----,-----,-----.
34. ----- is used to protect the motor from over load.
35. The running current of a 5 HP motor is approximately ----- amps.
36. Single phasing preventor is used for -----.
37. Types of windings used for motor windings are ----- and -----.

CHAPTER – IX

TRANSFORMER, OH LINES, CABLES, WIRING AND CONTROL EQUIPMENT

1. Transformer is a _____ device
2. _____ transformer is used to increase the voltage.
3. _____ transformer is used to reduce voltage.
4. Single winding transformer is called _____
5. Transformer has got _____ & _____ winding.
6. Transmission transformer is called _____ transformer.
7. _____ transformer is used to cater load to the consumer.
8. _____ oil is used in the transformer.
9. The purpose of transformer oil is to _____
10. _____ is filled in breather of the transformer to remove moisture.
11. Colour of the good silica gel is _____
12. After absorbing the moisture the colour of the silica gel changes to _____
13. _____ is used in the transformer to indicate oil temperature.
14. _____ is used in the transformer to indicate the oil level.
15. _____ will open when the pressure in side the transformer crosses the permissible limit.
16. _____ is used to change the voltage output of a transformer.
17. The capacity of a transformer is rate in _____.
18. 1 MVA = _____ VA.
19. The _____ and _____ of the distribution transformer to be earthen.
20. BDV of transformer oil is measured in _____.
21. To measure high AC current _____ transformer is used.
22. Example of OH conductor is _____.
23. The post to post distance in a OH line is called _____
24. Example for UG cable is _____.
25. In UG cable 3 ½ core means
26. In UG cable _____ is used to product the cable from mechanical damage.
27. _____ joint is used to connect two bits 185 Sq.mm LTUG cables.
28. _____ size of copper cable is used for lights and tans wiring in houses.
29. _____ size of copper cable is used for 5A plug points in houses.
30. _____ size of copper cable is used for 1500W water heater in houses.

EXPAND THE FOLLOWING:

1.	mm		42	FNE	
2.	Cm		43	MCB	
3.	Kg		44	HRC	
4.	gm		45	DFB	
5.	⁰ F		46	BHP	
6.	⁰ C		47	DG	
7.	HP		48	PVC	
8.	k W		49	FRP	
9.	k Wh		50	SPM	
10.	SWG		51	CFL	
11.	A		52	AC	
12.	Ω		53	DC	
13.	W		54	MCCB	
14.	V		55	WRA	
15.	LT		56	LP	
16.	HT		57	HP	
17.	EHT		58	OLR	
18.	Ah		59	DBT	
19.	Pb		60	WBT	
20.	VRLA		61	RMPU	
21.	SMF		62	DCP	
22.	NG		63	CO ₂	
23.	BG		64	IGBT	
24.	MG		65	BC	
25.	BCT		66	HPSV	
26.	EFT		67	HPMV	
27.	EOG		68	FL	
28.	MOG		69	IC	
29.	PCD		70	UG	
30.	MA		71	OH	
31.	DT		72	OCB	
32.	ET		73	VCB	
33.	CT		74	TPIC	
34.	KMPH		75	PF	
35.	LX		76	ELCB	
36.	XLPE		77	HOER	
37.	HZ				
38.	SMI				
39.	ERRU				
40.	AHU				
41.	LHB				