Mechanical
Power Transmission

Block diagram, Types of power Transmission Mechanical Power Transmission V-belt, chain drive pulley drive Cardon Shaft etc.

01.01 What do you mean by block diagram of power transmission?

01.02 How many types of power transmission are there in use in track machine?

01.03 Explain various types of power transmission?

01.04 Which is the medium of power transmission inV-belt drive?

01.05 What are the various draw backs of V-belt drive?

01.06 What is a chain drive?

01.07 What do you understand by gear drive?

01.08 What precautions are taken while mounting 'V' belt?

01.09 Describe various application of chain drive in track machine?

01.10 What are the different failures on mechanical power transmission such as 'V' belt, chain drive & gear drive?

01.11 Please explain drive gear and driven gear?

01.12 'What are the advantages of pulley drive?

01.13 What do you understand by Cardon Shaft?

01.14 What precautions are taken while filling a cardon shaft?

01.15 Why it is necessary to do greasing of cardon shaft?

Mechanical
Power Transmission

01.01 Mechanical Power Transmission methods used in any working unit are:
(i) 'V' belt (ii) Chain drive (iii) Gear drive(iv) All of above.

01.02 For 'V' belt transmission we use following methods:
(i) Self Starter (ii) Dynamo (iii) 'V' belt (iv) None of above.

01.03 Simplex chain and duplex chain of PQRS is run by:
(i) Pulley drive (ii) Chain drive (iii) 'V' belt drive (iv) All of above.

01.04 Mechanical advantage is achieved:
(i) V belt drive (ii) Chain drive (iii) Pulley drive (iv) Gear drive.

01.05 Mechanical power transmission through:
(i) Cardon Shaft (ii) Alternator (iii) Battery (iv) All of above.

01.06 Gear Ratio in any mechanical power-Transmission is achieved through:
(i) $D_1 \times D_2$ (ii) D_1/D_2 (iii) D_1-D_2 (iv) D_1-D_2

01.07 If more nos. of pulleys are added then mechanical advantages will be:
(i) Decreased (ii) Increased (iii) Will be equal (iv) Non of above.

01.08 Male & female portion is available in following mechanical power transmission:
(i) Belt drive (ii) Chain Drive (iii) Cardon shaft (iv) Gear drive.

01.09 Mechanical power transmission is subjected to more:
(i) Slippage. (ii) More wear & Tear(iii) More friction (iv) All of above.

01.10 No. of Cardon shafts provided in C.S.M.:
(i) 04 Nos. (ii) 05 Nos. (iii) 07 Nos. (iv) None of above.

01.11 In Duomatic machines the shaft for PTO for work drive is used as:
(i) 940mm. (ii) 730mm. (iii) 550mm. (iv) None of above.

01.12 'V' belt used for alternator in DUO machine:
(i) B -36. (ii) B-51. (iii) C-75. (iv) None of above.

ANSWER

01- iv	02-iii	03-i	04-iii	05-i	06-ii
07-ii	08-iii	09-iv	10-iii	11-iii	12-iii

Mechanical Objective Questions
Gear Box & Clutch

Gear Box and Clutch Assembly in UNO/DUO Working Construction and maintenance practices of Main Gear Box and Clutch Assembly.

Please Tick the Correct Answer:

02.01 Power Transmission in UNO/DUO is through:
(i) Gear Box (ii) 'V' Belt (iii) Chain Drive (iv) Pulley Drive

02.02 No. of gear boxes used in DUO/UNO machine.
(i) 2 Nos. (ii) 3 Nos. (iii) 7 Nos. (iv) None of above

02.03 In Duomatic machine, power is transmitted to main gear box from engine through cardon shaft of:
(i) 930mm (ii) 740mm (iii) 330mm (iv) None of above.

02.04 No. of pumps driven by main gear box in Duomatic:
(i) One Pump (ii) Two pump (iii) 3 Pumps (iv) None of above.

02.05 Function of engager body of main Gear Box is to:
(i) Engage and disengage Hydraulic Pumps (ii) To shift the hydraulic pumps
(iii) To idle the main gear box (iv) None of above.

02.06 How many nos. of main shaft in main gear box?:
(i) One No. (ii) Two Nos. (iii) 3 Nos. (iv) None of above.

02.07 Nos. of drive shaft in main gear box:
(i) One No. (ii) Two Nos. (iii) 3 Nos. (iv) None of above.

02.08 NU2220 is the type of bearing:
(i) Roller Bearing (ii) Ball Bearing (iii) Needle Bearing (iv) None of above.

02.09 For lubrication of gears in main gear box:
(i) SAE C-90 is used (ii) Grease RR3 is used
(iii) Hydraulic HLP-68 is used (iv) None of above.

02.10 Engager body is provided on:
(i) Drive shaft (ii) Pump shaft (iii) Cardon shaft (iv) None of above.

02.11 Clutch assembly is used for the purpose of:
(i) To disengage and engage the power limit (ii) Change of speed
(iii) Change of lever (iv) None of above.

02.12 While working with Duomatic machine/Unomatic machine:
(i) Both hydraulic pump should be engaged
(ii) Both hydraulic pump should not be engaged
(iii) Only one pump should be engaged
(iv) None of above.

02.13 Back lash is kept in Train on Gear:
(i) 0.1-0.2mm (ii) .07-0.25mm (iii) 1-2mm (iv) None of above.

02.14 Back lash is kept in Crown gear:
(i) 0.1-0.2mm (ii) .07-0.25mm (iii) 1-2mm (iv) None of above.

02.15 Gear oil of main ear box is changed at:
(i) 200hrs. (ii) 500hrs (iii) 1000hrs (iv) None of above.

02.16 What will happen in case of DUO/UNO machine, if clutch is not actuated:
(i) Gears will not be operated (ii) Hyd. Pump will fail
(iii) Brake will not be applied (iv) None of above.

ANSWER

01- i	02-iv	03-i	04-iii	05-i	06-i
07-i	08-i	09-i	10-ii	11-i	12-i
13-i	14-ii	15-i	16-i		

Mechanical
Gear Box & Clutch Assembly

Working construction and maintenance practices of reversing Gear Box and Six speed gear box

Fill in the blanks with appropriate words:

03.01 Six speed Gear Box has……..shafts.

03.02 Six speed Gear Box has……..reversing gear box.

03.03 Change of Direction of movement of old Duomatic machine is done through….Gear Box.

03.04 ……..….No. of gears can be selected through Six speed gear box.

03.05 During working…….speed is selected
(i) Neutral (ii) 1st gear (iii) 2nd Gear (iv) 3rd Gear

03.06 PTO is used to run the-
(i) Main shaft (ii) Lay shaft (iii) Both (iv) None

03.07 PTO is drive by-
(i) Reversing Gear Box (ii) Hydro motor (iii) Both (iv) None

03.08 The oil used in Six Speed Gear Box housing is……. .

03.09 Reversing gear box is a part of main gear box. Say True or False.

03.10 If clutch is not operated then what will happen-
(i) Gears will be operated (ii) Gears will not be operated
(iii) Gears will be disengaged (iv) None of above.

03.11 In Old Duomatic machine, driving is possible from-
(i) One Cabin (ii) Both Cabins (iii) None of above.

03.12 For mechanical drive system, initial torque needed is-
(i) Less (ii) Maximum (iii) Average (iv) None of above.

ANSWER

01- Two	02-One	03-Reversing	04-6	05-ii	06-ii
07-ii	08-SAE C-90	09-True	10-i	11-i	12-ii

Mechanical
Distribution Gear Box

Please tick the correct answer:

04.01 How many gears are provided in distributor Gear Box?
(i) One (ii) Two (iii) Three (iv) Four

04.02 Oil for lubrication in distributor gear box is provided:
. (i) T. Q. Oil (ii) Hyd. Oil (iii) Gear Oil (iv) Lube Oil

04.03 Quantity required for Lubrication in distributor gear box:
(i) 2.0 Lts. (ii) 1.8 Lts (iii) 5.5 lts (iv) 6.5 lts

04.04 No. of Cardon shafts connected with distributor gear box:
(i) One (ii) Two (iii) Three (iv) None of above

04.05 Oil of distributor gear box is changed at:
(i) 100hrs. (ii) 200hrs (iii) 500hrs (iv) 1000hrs

04.06 Oil seal provided in distributor gear box:
(i) 85 x 105 x 13 (ii) 65 x 110 x 15 (iii) 75 X 100 x 13 (iv) None of above

04.07 Taper roller bearing in distribution Gear Box provided:
(i) 32213AF-33 (ii) 6202 (iii) 2220 (iv) None of above

04.08 In output shaft ball bearing provided is:
(i) 6212 (ii) 6305 (iii) GE-20 (iv) None of above

04.09 How many distributor gear boxes are provided on Duomatic machine:
(i) One (ii) Two (iii) Three (iv) Four

04.10 How many gear boxes are provided on CSM Machine:
(i) One (ii) Two (iii) Three (iv) Four

ANSWER

01- ii	02-iii	03-ii	04-iii	05-ii	06-i
07-i	08-i	09-i	10-iii		

Mechanical
Driving and Running Axle

Please tick the correct answer:

05.01 Crown and Tail Pinion arrangement is provided in the axle:.
(i) Driving Axle (ii) Running Axle (iii) Both (iv) None of above

05.02 The following is the idle axle:
. (i) Driving Axle (ii) Running axle (iii) Both (iv) None of above

05.03 Quantity of oil (Gear oil) provided in driving axle:
(i) 2 Lts. (ii) 1.8 Lts (iii) 5.5 lts (iv) 6.5 lts

05.04 Wheel diameter of driving and running axle is:
(i) 710mm (ii) 730mm (iii) 740mm (iv) 800mm

05.05 Allowable wheel diameter of driving axle and running axle is:
(i) 710mm (ii) 730mm (iii) 680mm (iv) None of above

05.06 The length of driving axle in CSM is:
(i) 2000mm (ii) 1800mm (iii) 2166mm (iv) None of above

05.07 Bearing provided in Crown housing is:
(i) N 2220 (ii) GE05 (iii) 32032X0 (iv) None of above

05.08 Bearing provided in tail pinion is both 2 & 3:
(i) 6220 (ii) N4 2315 (iii) 31313 (iv) Both 2 & 3

05.09 Bearing provided in the axle gear box of driving an during axle is (Duomatic/Unomatic:
(i) Bearing NJ2220 & JP2220 (ii) Bearing 620P (iii) Bearing 6315 (iv) Non of above

05.10 Change of oil in driving axle is done at:
(i) 100hrs (ii) 200hrs (iii) 500hrs (iv) 1000hrs

05.11 Crown is pressed with hydraulic pressure in the driving axle at:
(i) 80Ton (ii) 100Ton (iii) 500Ton (iv) None of above

05.12 Wheel is pressed in the driving axle at a pressure of:
(i) 80Ton (ii) 50Ton (iii) 200Ton (iv) None of above

05.13 No. of teeth provided in tail pinion is:
(i) 10Nos. (ii) 20Nos. (iii) 30Nos. (iv) None of above

05.14 Nos. of teeth provided in Crown wheel:
(i) 36Nos. (ii) 40Nos. (iii) 50Nos. (iv) None of above

05.15 Axle dia. on wheel seat is:
(i) 159mm (ii) 200mm (iii) 250mm (iv) None of above

05.16 Axle dia on crown seat is:
(i) 165mm (ii) 190mm (iii) 250mm (iv) None of above

05.17 Total length of axle of Duomatic machine (Ol(iv):
(i) 2150mm (ii) 2148mm (iii) 2170mm (iv) None of above

05.18 Maggie spring providing in a driving/running axle:
(i) 2Nos. (ii) 6Nos. (iii) 4 Nos. (iv) None of above

05.19 Brake cylinder provided in a driving axle:
(i) 1Nos. (ii) 2Nos. (iii) 3Nos. (iv) None of above

ANSWER

01- i	02-ii	03-iv	04-ii	05-iii	06-iii
07-iii	08-iv	09-i	10-ii	11-i	12-ii
13-i	14-i	15-i	16-i	17-ii	18-iii
19- i					

Mechanical
Function and Construction
Z. F. Gear Box

Please tick the correct answer:

06.01 Z. F. is a:.
(i) Mechanical Gear Box (ii) Electrical Power
(ii) (iii) Hydrodynamic Power (iv) None of above

06.02 Z.F. belongs to:
. (i) U.K. (ii) Germany (iii) France (iv) None of above

06.03 Z. F. Gear Box is:
(i) One Gear system (ii) Two Gear system (iii) Multiple Gear system(iv) None of above

06.04 Z. F. stands for:
(i) Zaharaid Fabrick (ii) Zagvan Freeial (iii) Zackal Fruk (iv) None of above

06.05 Z.F. needs:
(i) Gear engagement (ii) Clutch Pedal (iii) No clutch Pedal (iv) None of above

06.06 Z. F. Gear Box works on the principle of:
(i) Fluid coupling (ii) Mechanical coupling (iii) Water coupling (iv) None of above

06.07 Torque converter is the part of:
(i) Servo Valve (ii) Relief Valve (iii) Z.F. Gear Box (iv) None of above

06.08 Torque converter consists of:
(i) Impellor, stator and turbine (ii) Impellor & stator
(iii) Stator & Turbine (iv) None of above

06.09 In torque converter impeller takes oil:
(i) From Pump (ii) From motor (iii) From solenoid (iv) Non of above

06.10 WK means:
(i) With Convertor Clutch (ii) With Motor (iii) With pump (iv) Non of above

06.11 In Z. F. Gear Box all the gears are in:
(i) Constant Mesh (ii) Without Mesh (iii) Freewheeling (iv) None of above

06.12 Impeller is attached to:
(i) Engine Fly Wheel (ii) Engine Crank Shaft (iii) Both (iv) None of above

06.13 Stator rests in between:
(i) Impeller & Turbine (ii) Remain free (iii) Both (iv) None of above

06.14 Impeller of Torque converter hrs:
(i) Curved blade (ii) Straight blade (iii) No blade (iv) None of above

06.15 Output Rotation is achieved:
(i) Turbine (ii) Stator (iii) Both ((i) & ((ii) (iv) None of above

06.16 The pump supplies hydraulic oil to Torque converter:
(i) 40lts/mt. (ii) 20lts/mt. (iii) 20lts (iv) None of above

06.17 Shifter assembly is the part of:
(i) ZF Gear Box (ii) Six Speed Gear Box (iii) Main Gear Box (iv) None of above

06.18 Z. F. is…….:
(i) Mechanically controlled (ii) Electrically controlled
(iii) Pneumatically Controlled (iv) None of above

06.19 Each Gear selection:
(i) Two solenoids to be engaged (ii) One solenoid to be engaged.
(iii) Five solenoids to be engaged (iv) None of above

06.20 Which type of oil previously used for ZF Gear Box :
(i) Ultra-40 (ii) Ultra-50 (iii) Ultra-10 (iv) None of above

06.21 Normally how many outputs are received from Z.F. Gear Box:
(i) One (ii) Two (iii) Three (iv) None of above

06.22 Gear train consists of:
(i) Nos. of Gears connected to each other (ii) One Gear connected
(iii) Two Gear connected (iv) None of above

06.23 W. G. Stands for:
(i) Water base oil (ii) Hydrodynamic Reversing (iii) Mineral base oil (iv) None of above

06.24 Capacity of ZF Gear Box is:
(i) 45 lts. (ii) 20 lts. (iii) 100 lts. (iv) None of above

06.25 Oil change of Z. F. Gear Box is done at:
(i) 500 Hrs. (ii) 1000 Hrs (iii) 2000 Hrs. (iv) None of above

06.26 Filter of Z. F. Gear Box is:
(i) 50µ (ii) 25µ (iii) 100µ. (iv) None of above

06.27 Main control pressure of Z.F. Gear Box is:
(i) 12-14 bar ii) 6-8 bar (iii) 2-4 bar. (iv) None of above

06.28 Lubricating pressure of Z. F. Gear Box should not be more than:
(i) 3.5bar ii) 2.0 bar (iii) 4.0 bar. (iv) None of above

06.29 Oil for Z. F. Gear box is:
(i) 15W40 ii) SS-100 (iii) SS-68. (iv) None of above

06.30 Name of Solenoids of shift assembly is:
(i) M_1 M_2 M_3 M_4 ii) S_1 S_2 S_3S_4 (iii) R_1 R_2 R_3R_4 (iv) None of above

06.31 During lock up in ZF gear box, speed is:
(i) Average ii) Minimum (iii) Maximum (iv) None of above

06.32 The resistance of solenoid of shifter assembly is:
(i) 20-30 ohm (ii) 60-80 ohm (iii) 100-200 ohm (iv) None of above

ANSWER

01- iii	02-ii	03-iii	04-i	05-iii	06-i
07-iii	08-i	09-i	10-i	11-i	12-i
13-i	14-i	15-i	16-i	17-i	18-ii
19- i	20-iii	21-iv	22-i	23-ii	24-i
25-i	26-ii	27-i	28-i	29-i	30-i
31-iii	32-ii				

Mechanical
Precaution during working and Maintenance

Please tick the correct answer:

07.01 The pump flow of hydraulic pump of Z.F. gear box is checked through?
(i) Flow meter (ii) Lactometer (iii) Hydrometer (iv) None of above

07.02 What is the orifice size of Intermediate plat of shifter assembly?
. (i) 0.2mm (ii) 0.6mm (iii) 3mm (iv) None of above

07.03 What should be the recommended rpm for checking of oil level of Z.F. Gear Box?
(i) Less than 100rpm (ii) At 1000 rpm (iii) More than 100rpm (iv) None of above

07.04 While travelling on Gradient/Ghat Section), what should be done in Z.F. Gear Box.
(i) Extra oil to be filled in (ii) Less oil required (iii) No use of oil (iv) None of above

07.05 What will happen if towing lever belt/Spleen dislocated during process of working?
(i) Machine movement will stop (ii) Machine movement will not stop
(iii) Sound will come from Torque converter (iv) None of above

07.06 Inductive Transmitter Resistance should be:
(i) 1.5K-ohm (ii) 5.0K-ohm (iii) 10K-ohm (iv) None of above

07.07 What will happen if early or late shifting of gear is done in Z.F. gear box?
(i) Excessive temperature (ii) Less temperature (iii) No effect (iv) None of above

07.08 The maximum working temperature of Z.F. Gear Box:
(i) 120^0C (ii) 100^0C (iii) 200^0C (iv) None of above

07.09 While passing through down gradient the rpm should be:
(i) Upto 1200rpm (ii) Upto 1000rpm (iii) Upto 2000rpm (iv) None of above

07.10 If fumes are coming from breather of Z.F. Gear Box, it happens:
(i) Due to chocking of lubricating line (ii) Due to high rpm (iii) Both (iv) None of above

07.11 If main pressure is Too Low, then what like happen:
(i) Stoppage of clutch (ii) Stoppage of gear (iii) Pump giving high out put (iv) None

07.12 Towing of machines by Z.F. Gear box should be done above:
(i) Above 10KMPT (ii) At 10 KMPT (iii) At 5 KMPT (iv) None of above

07.13 After application of brakes, it is to be ensured:
(i) Acceleration (ii) Deceleration (iii) Torque (iv) None of above

07.14 Don't work with Z.F. Gear Box, If main pressure is
(i) Less than 10 bar (ii) less than 20bar but more than 10 bar
(iii) More than 20 bar (iv) None of above

07.15 Gear shifting in Z.F. Gear Box is done at:
(i) 1.17 to 1.7 Sec (ii) 2.5 to 3.0 Sec (iii) 5-10 Sec (iv) None of above

07.16 Locking tites for NUT and bolt used is:
(i) 270 No. (ii) 300 No. (iii) 400 No. (iv) None of above

07.17 For sealant gasket, locktite used is:
(i) 574 No. (ii) 600 No. (iii) 800 No. (iv) None of above

07.18 In neutral position of Gear, which is correct:
(i) Two clutches remain engaged (ii) Three clutches remain engaged
(iii) Four clutches remain engaged (iv) None of above

07.19 Pressure cut off switch is :
(i) 2.5bar (ii) 3.5bar (iii) 4.0bar (iv) None of above

07.20 What will happen if orifice of Intermediate plate of shift assembly is chocked:
(i) Machine Movement will stop (ii) No change in movement
(iii) Sound from Torque Convertor will (iv) None of above

07.21 The Gap between two clutch packs of clutch Assembly is kept:
(i) 0.2 to 7mm (ii) 2.0mm to 3.0mm (iii) 4.0 to 5.0mm (iv) None of above

ANSWER

01- i	02-ii	03-ii	04-i	05-i	06-i
07-i	08-i	09-i	10-i	11-i	12-ii
13-ii	14-i	15-i	16-i	17-i	18-i
19- i	20-i	21-iv	22-i	23-ii	24-i
25-i	26-ii	27-i			

Mechanical
Failure Analysis and Troubleshooting

Please tick the correct answer:

08.01 By which Tool/Instrument, the flow of hydraulic pump will be checked?
(i) Flow meter (ii) Hydrometer (iii) Pressure Gauge (iv) None of above

08.02 If brushing of pump seal takes place, what will happen:
(i) Clutch will damage (ii) Machine movement will not stop
(iii) Machine movement will stop (iv) Nothing will happen

08.03 If oil level of Z.F. Gear Box is checked at Low rpm, what will happen:
(i) It will result into malfunction (ii) It will effect no result
(iii) Z.F. will not function (iv) None of above

08.04 If engine stops while shifting to 1st gear, it happens because:
(i) Due to failure in Electrical Circuit (ii) due to hydraulic failure
(iii) Clutch damaged (iv) None of above

08.05 If machine working with Z.F. Gear Box is over locked:
(i) Temperature will rise (ii) No rise in temperature
(iii) Rise in main pressure (iv) None of above

08.06 If fumes are coming from Z.F. Gear box, it is due to:
(i) Chocking of lubrication line (ii) Pump is defective
(iii) Gear engagement is difficult (iv) None of above

08.07 If oil becomes blackish in Z.F. Gear box, then it happen due to:
(i) Contaminated oil (ii) Gears damage (iii) No effect (iv) None of above

08.08 What will happen if Z.F. Key is not put off after stopping of machine:
(i) Damage of clutch and bearing (ii) No damage to clutch & bearing
(iii) No effect (iv) None of above

ANSWER

01- i 02-iii 03-i 04-ii 05-i 06-i
07-i 08-i

Mechanical
Working Construction and Maintenance Practices
Funk gear box

Please tick the correct answer:

08.01 Funk gear box is used for
(i) Pneumatic to hydraulic
(ii) Electrical to mechanical power transmission
(iii) Mechanical transmission to hydraulic power transmission
(iv) None of above.

08.02 Fund gear box has following nos. of gears-
(a One (ii) 2 Nos. (iii) 3 Nos. (iv) None of above

08.03 Following is mounted on funk gear box
(i) Hydraulic pumps (ii) Hydraulic motors (iii) Solenoids (iv) None of above

08.04 Following oil is used in funk gear box-
(i) Hydraulic Oil (ii) Nobile Oil (iii) Gear oil (iv) None of above

08.05 No. of bearing used on funk gear box in CSM machine-
(i) 6211 (ii) 6206 (iii) 6204 (iv) None of above

08.06 No. of teeth at centre gears are-
(i) 30 teeth (ii) 32 teeth (iii) 40 teeth (iv) None of above

08.07 Part no. engage body of funk gear box in CSM is-
(i) 6014M (ii) 6215M (iii) 6308 (iv) None of above

08.08 No. of teethes in side gears of Z.F. gear box is-
(i) 33 teeth (ii) 30 teeth (iii) 35 teeth (iv) None of above

08.09 Bearing used in funk gear box is-
(i) Roller bearing (ii) Ball bearing (iii) Needle bearing (iv) None of above

ANSWER

01- iii	02-iii	03-i	04-iii	05-i	06-ii
07-i	08-i	09-ii			

Mechanical
Working Construction and Maintenance Practices
Reduction gear box

Please tick the correct answer:

09.01 Reduction gear box is used in the following machines-
(i) Old Duomatic (ii) New Duomatic (iii) Both 1 & 2 (iv) None of above.

09.02 Reduction gear box is used for the purpose of-
(i) Reducing the speed of machine during working
(ii) Increasing the speed of machine while working
(iii) Both (i) & (ii)
(iv) None of above

09.03 Reduction gear box is used in forming mode of working-
(i) During working mode (ii) During traveling mode
(iii) During (i) & (ii) (iv) None of above

09.04 The oil for lubrication of reduction gear box used is-
(i) Hydraulic OilHP-68 (ii) Gear Oil C-90
(iii) Mobile oil 15W40 (iv) None of above

ANSWER

01- iii 02-i 03-i 04-ii

Mechanical
Working Construction and Maintenance Practices
Satellite Axle

Please tick the correct answer:

11.01 Satellite is a part of following machine-
(i) Duomatic (ii) CSM (iii) BCM (iv) None of above.

11.02 Following parts are mounted on satellite of machine-
(i) Tamping Unit & Lifting Unit (ii) Tamping Unit (iii) Lifting Unit (iv) None of above

11.03 No. of satellite unit on CSM machine-
(i) One no. (ii) Two nos. (iii) Three nos. (iv) None of above

11.04 Gears used in satellite unit of machine are-
(i) Spur gear (ii) Helical Gear (iii) Double helical (iv) None of above

11.05 Nos. of satellite unit on 3X-machine is-
(i) 1no. (ii) 2 nos. (iii) 3 nos. (iv) None of above

11.06 Satellite unit of CSM is run by-
(i)Vibration pump (38-17) (ii) System pump (38-22)
(iii) Cooling pump (20-14) (iv) None of above

11.07 Engaging of gears in satellite axle is through-
(i) Mechanical (ii) Hydraulic (iii) Pneumatic (iv) None of above

11.08 Oil change of satellite axle gear box is done at-
(i) 50hrs (ii) 200hrs (iii) 100hrs (iv) None of above

11.09 Main bearing provided on satellite axle box in CSM is-
(i) 32032X (ii) NU2220 (iii) NJP2221 (iv) None of above

ANSWER

01- ii	02-i	03-i	04-i	05-i	06-ii
07-iii	08-ii	09-i			

Hydraulic, Pneumatic & Mechanical:
Tamping Unit

01.01 What is the function of Tamping Units-
(i) To pack ballast under sleeper (ii) To lift track & pack ballast
(iii) Slewing of track (iv) none of these

01.02 In single sleeper packing machine number of tool provided-
(i) 16 Nos. (ii) 32 Nos. (iii) 12 Nos. (iv) 8 Nos.

01.03 In point & x-ing machine, number of tamping tools provided-
(i) 16 Nos. (ii) 32 Nos. (iii) 48 Nos. (iv) 8 Nos.

01.04 In point & x-ing machine following types of tamping tools is required-
(i) Two type (ii) One Type (iii) Three type (iv) None of these

01.05 Recommended oil for lubrication of tamping arm centre pin assembly radial seal is-
(i) SS-68 (ii) SS-100 (iii) SS-150 (iv) SAE C-90

01.06 Number of Tamping Tools provided in CSM Duomatic tamping machine--
(i) 32 Nos. (ii) 16 Nos. (iii) 48 Nos. (iv) 8 Nos.

01.07 Number of tamping tools are provided in 09-3X Machine-
(i) 32 Nos. (ii) 16 Nos. (iii) 48 Nos. (iv) 8 Nos.

01.08 In 09-3X number of tamping unit fitted--
(i) 2 Nos. (ii) 1 No. (iii) 3 Nos (iv) 4 Nos.

01.09 In Unimat -4S machine tamping units are in-
(i) 4 Parts (ii) Two Parts (iii) One piece (iv) None of above

01.10 In one tamping Unit in UNO/DUO/CSM/Unimat-2S & 3S only one vibration shaft is required –
(i) Yes (ii) No

01.11 In one tamping unit of 09-3X machine–
(i) One vibration shaft is required (ii) Two vibration shaft is required.

01.12 The amplitude of vibration is-
(i) 10mm (ii) 8mm (iii) 12mm (iv) 6mm

01.13 The RPM of tamping unit is-
(i) 2100rpm (ii) 2500rpm (iii) 2800 rpm (iv) None of these

01.14 The squeezing of tamping unit is -
(i) Synchronous type (ii) Non- Synchronous type

01.15 Total number of bearing required in one tamping unit of DUO/CSM/UNO/UNI-2S & 3S is -
(i) 11Nos (ii) 12Nos (iii) 16Nos (iv) 10Nos

01.16 Total number of bearing required in one tamping unit of 09-3X machine is-
(i) 11Nos (ii) 12Nos (iii) 16Nos (iv) 8Nos

01.17 Number of tamping arm in one-
(i) 6 Nos (ii) 12 Nos (iii) 8 Nos (iv) 4 Nos

01.18 Number of tamping arm in one tamping unit of DUO/CSM Machine is-
(i) 6Nos (ii) 12Nos (iii) 8Nos (iv) 4Nos.

01.19 Number of tamping arm in single sleeper packing machine i.e. UNO/ & Unimat is-
(i) 4Nos (ii) 8Nos (iii) 6Nos (iv) 12Nos.

01.20 Hydraulic pressure required in squeezing port of squeezing cylinder-
(i) During squeezing time (ii) During working always

01.21 Hydraulic pressure required in high pressure port/counter pressure port of squeezing cylinder
(i) During squeezing time (ii) During working time always

01.22 For lubrication of main bearing of UNO/DUO/CSM machine hydraulic-
(i) SS-68 (ii) SAE C-90 (iii) SS-150 (iv) SS-100

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01.23 In Russian tamping unit at centre pin assembly-
(i) Seal is provided. (ii) Bearing is provided

01.24 In Russian tamping unit at centre pin assembly-
(i) Grease lubrication is required (ii) Oil lubrication is required

01.25 The vibration is generated with the deep of vibration shaft--
(i) Yes . (ii) No.

01.26 In 09-3X machine tamping tools are fitted--
(i) Parallel Shank type (ii) Taper shank type

01.27 In other tamping machines except 09-3X tamping tools are fitted--
(i) Parallel Shank type (ii) Taper shank type

01.28 Tool tilting is required in following machine-
(i) For point & x-ing machine tamping unit (ii) For plain track machine tamping unit

01.29 The function of vibration motor is-
(i) To give movement to squeezing cylinder (ii) To rotate the vibration shaft
(iii) To give movement to guide column (iv) None of above

01.30 Gear ring/post clutch failure occurs, because-
(i) Centre line of vibration motor & vibration shaft is disturbed (ii) Hard bed
(iii) More vibration pressure (iv) None of above

01.31 Main oil seal size of tamping unit is-
(i) 130 x 165 x 13 (ii)130 x 160 x 13 (iii) 85x 50x13 (iv) None of above

01.32 Length of guide column of CSM machine is-
(i) 1290mm (ii) 1240 mm. (iii) 1365mm (iv) None of above

01.33 Length of Duomatic guide column is-
(i) 1290mm (ii) 1240 mm (iii) 1365mm (iv) None of above

01.34 Length of Unimat-2S guide column is-
(i) 130 x 165 x 13 (ii)1240mm (iii) 1365mm (iv) None of above

01.35 Length of Unimate-3S guide column is-
(i) 1290 mm (ii) 1240 mm. (iii) 1365 mm (iv) None of above

01.36 Length of 09-3X machine guide column is-
(i) 1290mm (ii) 1240 mm. (iii) 1365 mm (iv) None of above

01.37 The torque of pin D55mm is hammering torque-
(i) Yes (ii) No.

01.38 The torque of squeezing cylinder cover bolt is-
(i) 180Nos. (ii) 200Nos. (iii) 100 Nos (iv) None of above

01.39 The torque of piston screw attached with PB piston of squeezing cylinder-
(i) 600 NM (ii) 700NM

01.40 The torque of piston screw attached with cast iron piston of squeezing cylinder-

(i) 600 NM (ii) 700NM

Answer

Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.
1.	i	11.	ii	21	ii	31	i
2.	i	12.	i	22	iv	32	i
3.	i	13.	i	23	ii	33	ii
4.	i	14.	Ii	24	i	34	ii
5.	ii	15.	i	25	i	35	i
6.	i	16.	ii	26	i	36	iii
7.	iii	17.	i	27	ii	37	i
8.	iii	18.	i	28	i	38	i
9.	ii	19.	i	29	ii	39	i
10.	i	20.	i	30	i	40	ii

Hydraulic, Pneumatic & Mechanical:
Lifting & Lining Unit

01.02 What is the function of Lifting Units-
(i) It lifts the Track (ii) It lifts & aligns the track
(iii) It does only alignment (iv) None of above

01.02 How many type lifting & lining unit used in tamping machine-
(i) In sets (ii) Mono Block
(iii) Both Type (iv) None of above

01.03 In Unimat type tamping unit which type lifting units are used-
(i) Mono Block Type (ii) In sets type.

01.04 In plain tamper lifting work is used-
(i) Mono Block Type (ii) In sets type for LHS & RHS.

01.05 Hooks are used to lift the track-
(i) In point & X-ing type tamping machine (ii) In plain track tamping machine

01.06 Disc clamp rollers are used to lift the track-
(i) In all tamper (ii) In only in point & x-ing machine (iii) Only in plain tamper.

01.07 Disc clamp roller rotate in the lower clamp badly with the help of-
(i) Threads (ii) Bearing or Teflon bushes

01.08 How many lining cylinders are used in lifting unit -
(i) One (ii) Two (iii) Three (iv) None of these

01.09 How many track lifting cylinders are used in lifting unit -
(i) One (ii) Two (iii) Three (iv) None of these

01.10 How many disc clamp rollers are used in UNIMAT Machine–
(i) 2 Nos. (ii) 4 Nos. (iii) 8 Nos. (iv) None of these

01.11 How many disc clamp rollers are used in plain track tampers–
(i) 2 Nos. (ii) 4 Nos. (iii) 8 Nos. (iv) None of these

01.12 How many hooks are used are used in lifting unit of point &-x-ing machine-
(i) 1 No. (ii) 2 Nos. (iii) 8 Nos. (iv) None of these

01.13 Hydraulic rail clamp cylinder of Unimat & plain track tampers are-
(i) Inter Chargeable (ii) Non-interchangeable

01.14 In Unimat-3S machine for lifting & Lining-
(i) Servo valve are used (ii) Proportional valves are used
(iii) D.C. valve are used (iv) None of these

01.15 Third Rail lifting arrangement is given only in-
(i) All point & xing machine (ii) Unimate- 2S, 3S, & 4S.
(iii) Unimat 3S & 4S only (iv) None of these

01.16 In Unimate-2S & Old UNO/DUO machine for lifting & lining circuit-
(i) D.C. valve are used (ii) Proportional valve are used.
(iii) Servo valve are used. (iv) None of these

Answer :-

Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.
1.	ii	4.	i	7	i	10	i	13	ii	16	i
2.	iii	5.	ii	8	i	11	i	14	i		
3.	i	6.	i	9	ii	12	ii	15	iii		

Hydraulic, Pneumatic & Mechanical:
Bearings

01.03 Roller bearings are generally two type (1) Radial Bearing (2) Thrust Bearing-
(i) Yes (ii) No

01.02 Radial bearings are two type- Radial Ball & Roller type
(i) Yes (ii) No

01.03 In tamping unit of CSM/UNI-2S, 3S, UNO, DUO Number of bearing used in tamping Unit vibration shaft-
(i) 10 Nos. (ii) 12 Nos. (iii) 11 Nos. (iv) None of these

01.04 In 09-3X tamping unit number of bearing used-
(i) 10 Nos. (ii) 12 Nos.. (iii) 11 Nos. (iv) None of these

01.05 The first digit of bearing tells about the-
(i) Type of bearing (ii) Size & Type of bearing (iii) Size of bearing.

01.06 The second digit tells about the-
(i) Type of bearing (ii) Inner diameter of bearing
(iii) Outer diameter & width of the bearing. (iv) None of these

01.07 The third digit of bearings tells about the-
(i) Type of bearing (ii) Inner diameter of bearing
(iii) Outer diameter & width of the bearing. (iv) None of these

01.08 Clearance C3 & C4 is--
(i) Greater than standard clearance (ii) Equal to standard clearance
(iii) Less than standard clearance (iv) None of these

01.09 The first digit 'N' is used in terms of bearing for-
(i) All type of bearing (ii) Cylindrical roller bearing (iii) Ball bearing

01.10 Suffix 'M' used in terms of bearing–
(i) For Brass cage (ii) Plastic . (iii) Steel cage (iv) None of these

01.11 Suffix ZZ used in terms of bearing for–
(i) One side sealed (ii) both side sealed. (iii) Not sealed (iv) None of these

01.12 Suffix 'NA' used for interns of bearing-
(i) Paired bearing (ii) Unpaired bearing (iii) None of these

01.13 In paired bearing inner Race & order race of bearings-
(i) Inter changeable (ii) Non inter changeable (iii) None of these

01.14 For axle bearing lubrication, grease required-
(i) Multipurpose type (ii) Albania RL-2 type
(iii) Wheel bearing grease. (iv) None of these

01.15 Cooling efficiency is better in-
(i) Oil lubrication (ii) Grease lubrication
(iii) Both (i) & (ii) (iv) None of these

01.16 For Automatic greasing, grease required-
(i) Multipurpose (ii) Albania RL-2.
(iii) Wheel bearing grease (iv) None of these

01.17 For high rpm-
(i) Oil Lubrication is better (ii) Grease lubrication is better
(iii) Oil & Grease both are better (iv) None of these

01.18 Sealing is more difficult in-
(i) Oil Lubrication (ii) In grease Lubrication
(iii) In both oil & grease (iv) None of these

01.19 The numerical number of rocker bearing tells the-
(i) Bore of Bearing (ii) O.D. of bearing (iii) Width (iv) None of these

01.20 For tamping unit guide rod, lifting unit guide rod & lever clamp. Phosphorus bronze bushes used-
(i) Yes (ii) No

01.21 For mounting on shafts bearings are heated-
(i) By Gas flame (ii) By induction heater (iii) By oil bath (iv) both (ii)& (iii)

01.22 The bearings are heated for mounting on shaft-
(i) Up to 90^0C (ii) Up to 100^0C. (ii) Up to 250^0C. (iv) None of these

01.23 In piston rod of squeezing cylinders -
(i) Bearings are used (ii) P.B. Bushes are used
(iii) PG bushes used. (iv) None of these

Answer:

Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.	Q. No.	Ans.
1.	i	6.	iii	11	ii	16	ii	21	iv
2.	i	7	ii	12	i	17	i	22	i
3.	ii	8	i	13	ii	18	i	23	iii
4.	ii	9	ii	14	iii	19	i		
5.	i	10	i	15	i	20	i		

Hydraulic, Pneumatic & Mechanical:
B.C.M. Assemblies

19.01 How many engines are provided on BCM-
(i) 01 No. (ii) 02 Nos. (iii) 03 Nos. (iv) None of above

19.02 What is the type of engine provided on BCM-
(i) Cummins (ii) Deutz (iii) MWM (iv) None of above

19.03 How many types of conveyor belts are provided on BCM-
(i) One types (ii) Two types (iii) Three types (iv) None of above

19.04 Ballast is spread on track through-
(i) Main conveyer belt (ii) Distribution belt
(iii) Waste conveyer belt (iii) None of above

19.05 How many shovels are provided on BCM RM-80-
(i) 82 (ii) 90 shovels (iii) 70 Nos. (iv) None of above

19.06 How many intermediate shovels are provided on BCM RM-80-
(i) 82 (ii) 90 shovels (iii) 40 Nos. (iv) None of above

19.07 Screening of vibration is done through-
(i) Vibration drum (ii) Main conveyer (iii) Waste conveyer (iv) None of above

19.08 Vibration pressure of BCM is about -
(i) 360 (ii) 150 (iii) 40bar (iv) None of above

19.09 Safety device provided on waste conveyer-
(i) To protect from OHE mast (ii) To protect for more lifting
(iii) To protect from infringement of trough (iv) None of above

19.10 Cutting chain speed is of following type-
(i) One type (ii) Double type (iii) Four Type (iv) None of above

19.11 Name the troughs of BCM machines-
(i) Ascending trough & descending trough (ii) Roller & Guide trough
(iii) Lifting trough (iv) None of above

19.12 How many corner rollers are provided on BCM Machine-
(i) 2 Nos. (ii) 3 Nos. (iii)5 Nos. (iv) None of above

19.13 The length of cutter bar is-
(i) 1.85 meter (ii) 1.00meter (iii) 2.15 meter (iv) None of above

19.14 How many screen are provided on BCM-
(i) 80mm, 50mm, 32mm/25 mm (ii) 100mm, 120mm, 60mm
(iii) 200mm, 240mm, 200mm (iv) None of above

19.15 Chain tension is provided by the help of-
(i) Chain tensioning cylinder (ii) Ascending trough
(iii) Descending trough (iv) None of above

19.16 For fastening of screens, following item is used:-
(i) U-clamp (ii) L-clamp (iii) 'T' head bolt (iv) None of above

19.17 On BCM cutter chain rotates:-
(i) On Gear wheel (ii) On Belts (iii) On Sprockets (iv) None of above

ANSWER

01- ii	02-ii	03-iii	04-ii	05-i	06-i
07-i	08-i	09-i	10-iii	11-i	12-iii
13-iii	14-i	15-i	16-i	17-iii	

Hydraulic, Pneumatic & Mechanical: Grease and Lubricants

20.01 What is the type of grease used in track machine for lubrication-
(i) RR3. (ii) MP-2 (iii) Bearing Grease (iv) None of above

20.02 What is the name of brake fluid used in track machine-
(i) Gear oil (ii) T.Q Oil (iii) Hydraulic Oil (iv) None of above

20.03 What type of oil used in mechanical gear box-
(i) C-90. (ii) Ultra ten. (iii) Mobile Oil (iv) None of above

20.04 Oil used in Z.F. Gear Box is-
(i) 15W40 (ii) SAEC-90 (iii) HLP-68 (iii) None of above

20.05 The hydraulic oil used in track machine is-
(i) SS-68 (ii) HLP-68 (iii) Servo-317 (iv) None of above

20.06 Grease used in axle gear box is-
(i) Bearing Grease (ii) RR-3 (iii) MP-3 (iv) None of above

20.07 The lubricant used in axle of BCM is-
(i) Hydraulic Oil (ii) Gear Oil (iii) Mobile Oil (iv) None of above

20.08 The engine oil used for lubrication is -
(i) 15W40 (ii) Ultra-10 (iii) SS-100 (iv) None of above

20.09 The amount of hydraulic oil used in BCM axle is-
(i) 30 lts. (ii) 45 ltr. (iii)20 ltr (iv) None of above

20.10 The change of oil (gear oil) of main gear box of Duo is-
(i) 100hrs. (ii) 50hrs (iii)200hrs. (iv) None of above

20.11 The oil used in vibration screen of BCM is-
(i) Amola-150 (ii) SS-100 (iii) Sero-317 (iv) None of above

20.12 Greasing of track machines is done at-
(i) 50hrs. (ii) 100hrs (iii) 200hrs. (iv) None of above

20.13 Amount of gear oil used in gear box is-
(i) 20ltr. (ii) 100ltr. (iii) 45ltr. (iv) None of above

20.14 The capacity of Z.F. Gear box is-
(i) 45ltr. (ii) 20ltr. (iii) 30ltr. (iv) None of above

ANSWER

01- i	02-ii	03-i	04-i	05-ii	06-i
07-i	08-i	09-ii	10-iii	11-i	12-i
13-i	14-iii				

Hydraulic, Pneumatic & Mechanical:
Maintenance Schedules

22.01 How many maintenance schedules are there in Duomatic machine-
(i) 7 (ii) 4 (iii) 5 (iv) None of above

22.02 What is the schedule for change of oil of Z.F. Gear box.-
(i) 250hrs. (ii) 500hrs. (iii) 750hrs. (iv) 1000hrs.

22.03 Schedule-I is done for UNO/DUO machine in-
(i) 1hrs. (ii) 2hrs. (iii) 5hrs. (iv) None of above

22.04 50hrs. schedule-II is done for UNO/DUO machines in-
(i) 1hrs. (ii) 2hrs. (iii) 5hrs. (iv) None of above

22.05 Schedule-III- for 09/09-3X machine is done at-
(i) 100hrs. (ii) 200hrs. (iii) 500hrs. (iv) None of above

22.06 Schedule-IV for 09/09-3X machine is done at-
(i) 200hrs. (ii) 500hrs. (iii) 1000hrs (iv) None of above

22.07 Schedule-V for 09/09-3X machine is done at-
(i) 1000hrs. (ii) 5000hrs. (iii) 1000hrs (iv) None of above

22.08 Schedule-I for BCM is done by-
(i) 1hrs. (ii) 2hrs. (iii) 3hrs (iv) None of above

22.09 IOH of machine is done at-
(i) 1000hrs. (ii) 2000hrs. (iii) 4000hrs (iv) None of above

22.10 POH of machine is done at--
(i) 1000hrs. (ii) 2000hrs. (iii) 4000hrs (iv) None of above

22.11 IOH of machine is completed by -
(i) 45 days (ii) 60days (iii) 90 days. (iv) None of above

22.12 POH of machine is completed by
(i) 7 days (ii) 15days (iii) 30 days. (iv) None of above

22.13 Schedule-IV for PQRS is done at-
(i) 45 days (ii) 60days (iii) 90 days. (iv) None of above

22.14 Schedule-VI for BCM is done at-
(i) 45 days (ii) 90days (iii) 120 days. (iv) None of above

ANSWER

01- i	02-ii	03-i	04-ii	05-i	06-i
07-ii	08-ii	09-ii	10-iii	11-i	12-i
13-ii	14-i				