**PRACTICAL EXAMINATION ON: DRONA MK III Simulator**

| **S.No** | **SYMPTOM** | **FAULT** | **ACTION TAKEN** |
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| 1. | **Switching ON problem.** | * UPS may be faulty. * Switch board fuse may have blown /short cct. * AC power supply lead may be defective. | * Check AC input supply of UPS. * Check output voltage of UPS. * Check the fuse or internal wiring of switch board for any short cct. * Check continuity of AC power cable. If not OK replace with new one. |
| 2. | **No display on IIS PC.** | * Data cable from PC to Monitor may be faulty. * DDR RAM may be faulty. * Monitor may not be powered ON or faulty. * Mother Board of the PC may be faulty. | * Check data cable from PC to 18.5” TFT monitor, if faulty replace with new one. * Check DDR RAM of PC, if faulty replace with new one. * Check power supply and seviceability of monitor. * Check VGA out put with serviceable monitor. * If above things are OK replace the mother board with new one. |
| 3. | **No display on CGI Screen.** | * Data cable from PC to projector may be faulty. * DDR RAM of PC may be faulty. * GeForce XFX 8400 GTS NVIDIA card may be loosly fitted or faulty. * Projector may be faulty. | * Check data cable from PC to projector, if faulty replace with new one. * Check DDR RAM of PC, if faulty replace with new one. * Insert the GeForce XFX 8400 GTS NVIDIA card properly * Use separate monitor to check the display out put of PC, if OK then check the projector serviceability by replacing with new one. |
| 4. | **No camera out put.** | * 12 V DC may not applied to camera. * Video cable from camera to PC may be faulty or not connected. * Morphis card may be faulty in IIS PC. | * Check 12V DC adapter output. * Check DC power cable from adapter to camera. * Check continuity of video cable and proper soldering of BNC connector. * If above things are OK then check driver installation and configuration of Morphis card is done properly as per manual. If every thing is OK then image capturing card may be faulty, Replace with new one and load the driver and configure it, if required and check the camera out oput, problem may be resolved. |
| 5. | **IIS connected indication does not appear on CGI screens when program starts to run.** | * Wrong TCP / IP configuration. * UTP cable between IIS PC to Hub may be faulty * 8 Port Hub may be faulty * LAN card may be faulty | * System is configured in peer to peer networking mode. * For independent checking of NIC card serviceability follow this procedure:- * Open command prompt and type ping 127.0.0.1 and press Enter, if LAN card is ok it gives three times reply, if card is faulty it gives request timed out. * Check TCP/IP configuration of the system is as under. * IIS PC   IP ADDRESS 192.168.0.1  SUB NET MASK 255.255.255.0   * CGI PC   IP ADDRESS 192.168.0.30  SUB NET MASK 255.255.255.0   * Open command prompt of IIS PC and Enter the command Ping 192.168.0.30 -t and press Enter, if you get continuous reply that means IIS PC is communicating with CGI PC. * If still communication is not restored check the UTP cable connected between the PCs and Hub. If problem is not resolved replace the Hub with new one Communication will be restored. |
| 6. | **On pressing the trigger the weapon does not fire.** | * Interface unit may not be switched ON. * Wpn Interface card in Interface unit may not responding. * Interface unit SMPS may be faulty. * 50 pin round cable connection between Interface unit to IIS PC may be broken. * Input port of PCI 1021 card related to wpn action sensing may be faulty. | * Switch ON the Interface unit * Check problem is resolved or not. If not open diagnostic utility of PCI 1021 card in IIS PC and press the trigger. In diagnostic utility red signal will be converted to green, if problem is resolved then OK otherwise check Interface unit SMPS out put. If it is OK then put a multimeter knob between concerned test point and GND and press the trigger, on test point voltage should be changed. If it is OK then check the cable continuity between Interface unit and IIS PC. * If the problem is not resolved then change the 8255 IC of PCI 1021 card being used in IIS PC for sensing the weapon operation. |
| 7. | **Weapon fires but no recoil operation.** | * Flow control valve of Air compressor may be put in OFF position. * Solenoid valve may be faulty. * Connection between solenoid valve and Interface unit may be broken. * The Wpn Interface card that operates the solenoid valve may be faulty. * 50 pin round cable connection between Interface unit to IOS PC may be broken. * Out put port of PCI 1021 card generates signal to operate the solenoid valve may be faulty. | * Switch ON Air compressor to maintain sufficient air in the tank. * Check flow control valve is at ON position. * Check serviceability of concerned solenoid valve by applying +12V DC supply externally. * Check connection continuity between solenoid valve and Interface unit. * Open the cover of Interface unit and check voltage between test point (TP) of Recoil generation channel and GND. * Open diagnostic utility of PCI 1021 card in IIS PC and click on Recoil button. Now recoil operation signal from its out port is manually generated. * When recoil button is clicked ON by the Instructor, voltage level between recoil generation channel TP and GND must change, If problem is not resolved trace the recoil generation circuitry. If circuit is OK check continuity of cable. * If the problem is not resolved then change the 8255 IC of PCI 1021 card being used in IIS PC for generating the recoil signal. |
| 8. | **No sound on weapon firing** | * Sound system may not be switched ON. * Speaker input cable connected with IIS PC / CGI PC may have a loose connection. * Sound mute option may enabled in IIS PC / CGI PC. | * Switch ON the sound system. * Check cables for any loose connection/disconnection between IIS / CGI PC side and sound system. * Disable sound mute option if any in IIS /CGI PCs. * If problem is resolved then OK otherwise check audio driver is properly installed and functional in the PC. |
| 9. | **Difference between point of aim and point of hit during firing.** | * Laser diode may have mis alligned from its orignal position. * Camera is misaligned with screen. * System is not properly calibrated. | * Align laser in such a manner that back sight, fore sight and point of aim all should come in one line. Use the sights first. If problem still not resolved then adjust from the X-Y adjustment screws in the laser module. * Start the calibration module from Instructor station and follow the complete calibration procedure, Remove the IR filter, see the dotted image of screen in IIS PC monitor, clear and sharpen the image by adjusting camera knob of zoom, focusing and aperture. Align the camera in such a manner that screen left and top corner should be aligned properly with the left and top corner of the rectangle seen in IIS PC and complete the calibration procedure. |

1. **CAMERA CALIBRATION PROCEDURE:-**
2. **While doing Camera Calibration the Interface unit must be in OFF condition.**
3. **Double click on the “DRONA MK III” icon in the IO/IIS monitor then click on the “Login button”.**
4. **Click on the “Administration” option in the main menu then select “Calibration” option in the list.**
5. **Remove IR filter from the camera then click “Start Calibration” button. Fig 8**
6. **Check CGI screen the screen will show dotted patterns.**
7. **Click “IO Status” in the IO/IIS monitor then click on “Centre grab” button. Fig 8**
8. **Remove Mouse arrow on CGI screen.**
9. **Adjust the CCD Camera’s zoom lens till clear patterns shown on IO/IIS monitor.**
10. **Click “Calibrate” button then click “Fine Tune” button select without filter and Click “Fine Tune” button. Fig 9**
11. **The X & Y Values to be less than ±5 click “YES” else “NO” and repeat same procedure.**

**NOTE: In simulator room all lights to be “off”. IR Filter to be removes from CCD Camera. Interface unit OFF.**

**Remove the mouse arrow on the CGI screen.**

1. **WEAPON ZEROING PROCEDURE:-**
2. **Click DRONA MK III icon on the IO/IIS monitor then click “Login” button.**
3. **Click “Administration” Menu in the Main Menu bar then select “Weapon Zeroing” option in it.**
4. **Select Lanes which lane to be calibrated. Click on “Reset to Default” & Click “Start” button.**
5. **The CGI screen will show a plain screen with a black dot at middle screen.**
6. **Aim the black dot and fire one by one, the X & Y values to be less than ±5 for all respective lanes. Fig 10**
7. **If the X & Y Values are not the above mentioned limit The LASER mount has to adjust according to the location while aiming. The LASER & the Black dot both have to coincide.**
8. **If all the 4 weapon has the above mentioned limit then click “Save to DB” Button and Click OK.**
9. **Click “Exit” Button.**
10. **WEAPON** **DIAGNOSIS PROCEDURE:-**
11. **Start any one of the exercise then click “Diagnosis” option as shown in the main menu.**
12. **In the diagnosis window click on “Center” Fig 11**
13. **Check Trigger, Magazine, Auto TRB, Ready Switch conditions and remove fault.**
14. **In normal working condition of switch is**
15. **Trigger RED,**
16. **Magazine GREEN,**
17. **Ready GREEN,**
18. **TRAINEE REGISTRATION PROCEDURE:-**
19. **Click “Administration” then Click on “New Registration”.**
20. **Click “Register a Trainee” and feed the particulars of Trainee in the form. Fig 12**
21. **Save the form and click “Exit”.**
22. **ENVIRONMENT SETTING PROCEDURE:-**
23. **Click settings. Set various parameters like time of Day, Terrain Selection, Wind Effect, Fog, Snow, and Rain. Fig 13**

**PRACTICAL EXAMINATION ON: DRONA -II SML**

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| **SL NO** | **SYMPTOMS** | **FAULT** | **REMEDY** |
| **1** | **Switching ON Problem** | Power cord, MCB, Spike buster, I/p power lead of the UPS, UPS faulty | Check Power cord, MCB, Spike Buster, Power lead of UPS, MCB’s of UPS and Output of UPS.  Repair/Replace the faulty object. |
| **2** | **No Display on CGI Screen.** | Projector VGA Cable, NVIDA Card loosely fitted/faulty, Projector faulty and selection of computer | Check VGA Cable, NVIDA card fitting, Projector & Selection of Computer option.  Repair/Replace the faulty object. |
| **3** | **No CCD Camera Output** | 12V Adaptor, Power Cable, RF Cable, Morphis Card loosely fitted/faulty, | Check Adaptor, Power Cable, RF Cable, and Morphis fitting.  Repair/Replace the faulty object. |
| **4** | **IO/IIS & CGI no communication** | Wrong IP Address, Fire wall enable, Fault in LAN Switch/cable, LAN Adaptor. | Check Adaptor, IP Address, LAN Cable, Fire Wall setting,  Repair/Replace the faulty object. |
| **5** | **No weapon fire** | Magazine not fitted, Trigger not pressed, weapon interface card faulty, 50pin FRC/ D-Shell faulty, PCI 1021 card faulty | Check Magazine & Trigger Switches, Weapon interface card, 50-pin FRC/D-Shell, PCI 1021 card  Fitting.  Repair/Replace the faulty object. |
| 6 | **No Weapon Recoil** | Manual Valve, Pressure Regulator, Solenoid Valve/Relay, Weapon Interface Card, 50pin FRC/ D-Shell faulty, PCI 1021 card faulty, Recoil Cable and Air Pipe connectivity. | Check Manual Valve, Pressure Regulator, Solenoid Valve/Relay, Weapon Interface Card, 50pin FRC/ D-Shell cable, PCI 1021 card fitting, Recoil Cable and Air Pipe connectivity.  Repair/Replace the faulty object. |
| 7 | **No Hit Spots Display** | Laser Diode, Camera Calibration, Weapon Zeroing, IR Filter broken | Check Laser Diode/alignment, Camera Calibration, IR Filter  Repair/Replace the faulty object. |

**PRACTICAL EXAMINATION ON: 81MM Simulator**

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| **SL NO** | **SYMPTOMS** | **FAULT** | **REMEDY** |
| **1** | **Sys does not switch on** | * No power to sys * SMPS faulty * Power button problem * Mother Board faulty | * Check & replace power cable, check UPS O/P * Check & replace SMPS * Check & replace power button * Check & replace Mother Board |
| **2** | **No Display / Monitor goes to sleep mode** | * VGA cable faulty * RAM faulty * Graphics Card faulty | * Check & replace VGA cable * Check & replace RAM * Check & replace Graphics Card |
| **3** | **Window not appear** | Boot media failure | * Boot MGR missing * Check HDD cable * Power for HDD * Check BIOS setting * Check mother board connecter * windows corrupted (Reload window )\* * Replaced HDD |
| **4** | **UPS not switch on No backup** | * AC Main & Bty NA * Control panel PCB or switch may be faulty * Bty weak | * Check input & bty if required replace bty. * Check & replace * Replace Bty and check charging voltage |
| **5** | **Evaluation report not printing** | * USB cable (printer cable) * Printer driver not installed * Printer hardware may be faulty | * Check and replace cable * Check and install driver * Restart print spooler service check and repair it. |
| 6 | **Joystick not work** | * USB cable (printer cable) * Printer driver not installed * Printer hardware may be faulty | * Check and replace cable * Check and install driver * Restart print spooler service check and repair it. |
| 7 | **No sound heard during exercise** | * Connectivity & power supply of speaker * Speaker faulty | * Check power supply of speaker * Check Speaker must be switch ON & volume is not too low * Check connectivity from PC audio O/P to speaker Check & repair speaker |
| 8 | **No communication b/w MFC station & others** | * Connectivity * Mixer amplifier * Selector switch | * Check connectivity from mixer amp to selector switch & ICU * Check power supply of Mixer amp * Mixer amp must be switch ON * Communication selection must be done * Check serviceability of selector switch |
| 9 | **No display in Monitor 2 of Cmptr workstation** | * Connectivity * Resolution selection | * Check & replace VGA Cable form Graphics card to monitor 2 * Check power supply & power cable * Identify monitor 1 & 2, set monitor 1 as primary display resolution 1024\*768, monitor 2 resolution 1280\*1024 |
| 10 | **Server application not initialise message appear** | * Window firewall still ON * Desktop Computer still OFF or MPC application start firstly * Connectivity b/w workstation & Computer desktop * Logical connectivity b/w both Computer * Ethernet Card may be faulty | * Turn OFF win firewall & restart application * Turn ON Cmptr desktop & run MFC application firstly * Check & ensure connectivity on crossover cable * Check & configure LAN setting * Computer workstation 192.1.1.89 * Computer desktop 192.1.1.91 * Check & replace Ethernet Card \* |
| 11 | **Message “can’t receive msg” or “ can’t send msg” appear** | * Connectivity b/w both Cmptr * Anyone Cmptr goes to sleep mode | * Check & ensure Logical & Physical connectivity b/w both Cmptr * Close the application and restart |
| 12 | **Initial data not appear on MPC application** | Show target (ST) not done in MFC application | After layout of PL, Tgt, & op in MFC application, Open the MPC application. Then show Tgt ( flag on Tgt) in MFC application after that Initial data appear on MPC application |

**PRACTICAL EXAMINATION ON: 2.5T Simulator**

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| **Ser No** | **Symptom** | **Probable Fault** | **Action** |
| 1. | Veh starting problem | * + 1. +12V DC not Present at Ign Switch.     2. Comn Port is not connected/Hyperterminal value is not coming     3. Problem in Start Push Button | (i) Check the Power Supply Source of veh.  (ii) Check the wiring connection of Serial Cable as well as Serial Card.  (iii) Check/Replace the Start Push Button. |
| 2. | Veh is not marching | (i) Loose Wiring of Accelerator/Clutch  (ii) Logitech G27 | Check Wiring of Accelerator/ Clutch  (ii) Check the Drivers of Logitech G-27/initialization of Logitech |
| 3. | Gears Slippery | (i) Proximity Switches | (i) Check/Tightened the Proximity Switches. |
| 4. | Problem in controlling of Steering | (i) Settings of Logitech Profile corrupted | (i) Check the settings of Logitech G-27 as per Setting given in Technical manual or reload the drivers of G27 and set the profile settings. |
| 5. | Rear view is not coming | (i) Settings of Graphic card  (ii) ON/OFF status of Projector/VGA Cable | (i) Set the Graphic card for Horizental Spanning.  (ii) Check the power supply(AC mains)/VGA Cable or replace the Cable. |
| 6. | IIS/CGI are not communicating | (i) Settings of IP Addresses  (ii) Cross/Parallel Cable may be faulty | (i) Check/set the IP Addresses as per user manual.  (ii) Check/Replace the Cable/RJ45 connector. |
| 7. | In Windows & Hyper Terminal is not working | (i) Hypertermial Program may be corrupted | (i) Copy the Hypertermial Folder from Win XP loaded PC and Paster the Folder into System 32 Folder of Windows 7 and check the hyperterminal. |