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AUTOMOTIVE MECHATRONICS



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ASSESSMENT PACKAGE
National Vocational Certificate Level 2

Version 1 - November, 2019



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AUTOMOTIVE MECHATRONICS



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ASSESSMENT PACKAGE
National Vocational Certificate Level 2

Version 1 - November, 2019

Title of Qualification: Automotive Mechatronics	CS Code: 071400948	Level: 2	Version:
Competency Standard Title: Check Vehicle Transmission System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:.....
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <ol style="list-style-type: none"> Assessment Task 1: Check performance of manual transmission system as per manual Assessment Task 2: Check performance of hydraulic clutch system as per vehicle's manual <p>And complete:</p> <ol style="list-style-type: none"> Knowledge assessment test (Written or Oral) Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform replacement of gear oil as per procedure</p> <p>Performance Criteria 4: Perform disassembly of clutch system and its components as per manual</p> <p>Performance Criteria 5: Perform disassembly of gear box assembly as per manual</p> <p>Performance Criteria 6: Perform repair/service/replace of faulty components as per procedure</p> <p>Performance Criteria 7: Perform assembly of gear box and clutch assembly as per manual</p> <p>Performance Criteria 8: Ensure housekeeping after completion of task</p> <p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform replacement of clutch master cylinder and slave cylinder seal as per manual</p> <p>Performance Criteria 4: Perform clutch bleeding as per defined procedure</p> <p>Performance Criteria 5: Ensure housekeeping after completion of task</p> <p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Check performance of manual transmission system as per manual				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Performed replacement of gear oil as per procedure						
4	Performance Criteria 4: Performed disassembly of clutch system and its components as per manual						
5	Performance Criteria 5: Performed disassembly of gear box assembly as per manual						
6	Performance Criteria 6: Performed repair/service/replace of faulty components as per procedure						
7	Performance Criteria 7: Performed assembly of gear box and clutch assembly as per manual						
8	Performance Criteria 8: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>				Not Yet Competent <input type="checkbox"/>			

Assessment Task 2		Description of assessment task 2 Check performance of hydraulic clutch system as per vehicle's manual		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed replacement of clutch master cylinder and slave cylinder seal as per manual			
4	Performance Criteria 4: Performed clutch bleeding as per defined procedure			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio			
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks	
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4				
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>			

Title of Qualification: Automotive mechatronics	CS Code:	Level: # 2	Version:
Competency Standard Title: Check Vehicle Transmission System	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Check Vehicle Transmission System	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
1. What is the purpose of clutch system?	<ul style="list-style-type: none"> a) Disengage b) Engage c) Bonding d) Engage & disengage
2. Where mechanical clutch is used?	<ul style="list-style-type: none"> a) In master cylinder b) In slave cylinder c) In wheel cylinder d) In cable or linkages
3. By which of the material clutch plate lining is made?	<ul style="list-style-type: none"> a) Steel material b) Aluminum material c) Spring material d) Frictional material
4. Where hydraulic clutch is used?	<ul style="list-style-type: none"> a) In cable or linkage b) In air reservoir c) In booster assembly d) In master cylinder
5. What is the purpose of Bleeding in hydraulic system?	<ul style="list-style-type: none"> a) To remove hydraulic from wheel cylinder b) To move lubricant from lubrication system c) To remove coolant from cooling system d) To remove air from wheel cylinder/ Hydraulic system
6. Is the following statement True or False? Automatic vehicle have clutch system	True / false
7. Is the following statement True or False? CVT stands for continuous variable transmission	True / False
8. Where the pilot bearing is fixed?	<ul style="list-style-type: none"> a) In gear box b) In automatic transmission c) In clutch paddle d) In flywheel

Question	Candidate's answer
9. Which of the following shaft is not a part of manual transmission?	a) Input / primary shaft b) Output / secondary shaft c) Reverse gear shaft d) Cam shaft

Title of Qualification: Automotive Mechatronics	CS Code: 071400946	Level: 2	Version:
Competency Standard Title: Maintain Brake System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>5. Assessment Task 1: Perform Maintenance of Mechanical brake System 6. Assessment Task 2: Perform Maintenance of Hydraulic Brake System 7. Assessment Task 3: Perform Maintenance of Pneumatic Brake System</p> <p>And complete:</p> <p>8. Knowledge assessment test (Written or Oral) 9. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Perform removal & fitment of brake assembly as per manual Performance Criteria 4: Perform adjustment of brake shoes and parking brake cable as per procedure Performance Criteria 5: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Perform adjustment of brake pedal height and free play as per manual Performance Criteria 4: Check hydraulic brake system for leakage Performance Criteria 5: Perform brake bleeding Performance Criteria 6: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Perform inspection of brake lines, safety valve and water drain plugs Performance Criteria 4: Perform inspection of air leakages in brake system Performance Criteria 5: Ensure housekeeping after completion of task</p>

	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>
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Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Perform Maintenance of Mechanical brake System				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Performed removal & fitment of brake assembly as per manual						
4	Performance Criteria 4: Performed adjustment of brake shoes and parking brake cable as per procedure						
5	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Assessment Task 2		Description of assessment task 2 Perform Maintenance of Hydraulic Brake System		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed adjustment of brake pedal height and free play as per manual			
4	Performance Criteria 4: Checked hydraulic brake system for leakage			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3 Perform Maintenance of Pneumatic Brake System		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed inspection of brake lines, safety valve and water drain plugs			
4	Performance Criteria 4: Performed inspection of air leakages in brake system			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio		
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>		Authentic <input type="checkbox"/>
		Valid <input type="checkbox"/>		Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1			
2	Performance criteria 2			
3	Performance criteria 3			
4			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Brake System	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Brake system	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
10. In which of the following the kinetic energy is converted, when brakes are applied on a moving vehicle?	<ul style="list-style-type: none"> a) Mechanical energy b) Heat energy c) Electrical energy d) Potential energy
11. To stop a vehicle, on which of the following the required force is dependent?	<ul style="list-style-type: none"> a) the weight of vehicle b) the deceleration rate c) both (a) and (b) d) None of the above
12. Which is not a drum brake?	<ul style="list-style-type: none"> a) External contracting brake b) Internal expanding brake c) Disc brake d) All of the above
13. The hand brake of the automobile is usually	<ul style="list-style-type: none"> a) External contracting brake b) Internal expanding brake c) Disc brake d) All of the above
14. In disc brake, which is attached to the disc?	<ul style="list-style-type: none"> a) Wheel b) axle c) suspension system d) none of the above
15. Is the statement True or False? The mechanical brakes are operated by means of levers, bell cranks and cams	True/False
16. On which principle, Hydraulic brakes work?	<ul style="list-style-type: none"> a) Law of conservation of momentum b) Law of conservation of energy c) Pascal's law d) None of the above

Title of Qualification: Automotive Mechatronics	CS Code: 071400942	Level: 2	Version:
Competency Standard Title: Maintain Engine Assembly	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>10. Assessment Task 1: Perform engine assembly of the vehicle as per vehicle's manual</p> <p>11. Assessment Task 2: Set engine timings as per vehicle's manual specifications</p> <p>12. Assessment Task 3: Perform engine and transmission coupling</p> <p>And complete:</p> <p>13. Knowledge assessment test (Written or Oral)</p> <p>14. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Disassemble main components of engine assembly as per manual</p> <p>Performance Criteria 4: Check cylinder head for flatness or warped/twisted</p> <p>Performance Criteria 5: Inspect and verify main components of engine assembly for fault</p> <p>Performance Criteria 6: Refit/retard engine assembly as per manual</p> <p>Performance Criteria 7: Ensure housekeeping after completion of task</p> <p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Set engine valve timing as per procedure</p> <p>Performance Criteria 4: Set engine timing for advance/retire setting as per procedure</p> <p>Performance Criteria 5: Ensure housekeeping after completion of task</p>

	<p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Ensure proper level of engine and transmission before assembly</p> <p>Performance Criteria 4: Ensure proper fitment of primary shaft into the clutch plate drive hub as per manual</p> <p>Performance Criteria 5: Fit engine and transmission bolts as per vehicle's manual</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Perform engine assembly of the vehicle as per vehicle's manual				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance criteria 2: Selected tools and equipment for the given task						
3	Performance criteria 3: Disassembled main components of engine assembly as per manual						
4	Performance criteria 4: Checked cylinder head for flatness or warped/twisted						
5	Performance Criteria 5: Inspected and verified main components of engine assembly for fault						
6	Performance Criteria 6: Refitted/retard engine assembly as per manual						
7	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Assessment Task 2		Description of assessment task 2 Set engine timings as per vehicle's manual		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Set engine valve timing as per procedure			
4	Performance Criteria 4: Set engine timing for advance/retire setting as per procedure			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3 Perform engine and transmission coupling		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Ensured proper level of engine and transmission before assembly			
4	Performance Criteria 4: Ensured proper fitment of primary shaft into the clutch plate drive hub as per manual			
5	Performance Criteria 5: Fitted engine and transmission bolts as per vehicle's manual			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio		
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>		Authentic <input type="checkbox"/>
		Valid <input type="checkbox"/>		Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1			
2	Performance criteria 2			
3	Performance criteria 3			
4			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Title of Qualification: Automotive mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Engine Assembly	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Engine Assembly	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
17. Engine is a machine which convert chemical energy into	<ol style="list-style-type: none"> 1. Mechanical 2. Light 3. Heat 4. chemical
18. Crank shaft converts reciprocating motion into	<ol style="list-style-type: none"> 1. Liner motion 2. Up & down motion 3. Harmonic motion 4. Rotatory motion
19. In most of the car, the engine type used is	<ol style="list-style-type: none"> 1. Rotatory engine 2. Opposed engine 3. V type engine 4. In-line engine
20. Type of cooling system used in car engine	<ol style="list-style-type: none"> 1. Chemical cooled 2. Self-cooled 3. Fan cooled 4. Liquid or air cooled
21. Thermostat is a part of	<ol style="list-style-type: none"> 1. Lubrication system 2. Transmission system 3. Cabin 4. Liquid cooling system
22. Intake and exhaust valves are same in design and material	True / False
23. What is index mark?	
24. What is timing mark?	

Question	Candidate's answer
25. Give name of main parts of an engine	

Title of Qualification: Automotive Mechatronics	CS Code: 071400945	Level: 2	Version:
Competency Standard Title: Maintain Engine Lubrication System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>15. Assessment Task 1: Test performance of oil pressure switch, oil pump and investigate oil leakages in lubrication system</p> <p>And complete:</p> <p>16. Knowledge assessment test (Written or Oral)</p> <p>17. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Observe oil lamp indicator on instrument panel as per defined procedure</p> <p>Performance Criteria 4: Perform thoroughly inspection for oil leakages</p> <p>Performance Criteria 5: Inspect oil strainer, pump and pressure relief valve after dismantling as per vehicle's manual</p> <p>Performance Criteria 6: Replace gasket/seal as per procedure</p> <p>Performance Criteria 7: Ensure housekeeping after completion of task</p> <p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Test performance of oil pressure switch, oil pump and investigate oil leakages in lubrication system				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Observed oil lamp indicator on instrument panel as per defined procedure						
4	Performance Criteria 4: Performed thoroughly inspection for oil leakages						
5	Performance Criteria 5: Inspected oil strainer, pump and pressure relief valve after dismantling as per vehicle's manual						
6	Performance Criteria 6: Replaced gasket/seal as per procedure						
7	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Portfolio (if any)		Description of portfolio			
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks	
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4				
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>			

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Engine Lubrication System	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Engine Lubrication System	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
26. Wet sump lubrication system employ a large capacity oil sump at the base of crank chamber, from which the oil is drawn by a low pressure oil pump and delivered to various parts.	a) True b) False
27. In full pressure system, oil from oil sump is pumped under pressure to the various parts requiring lubrication.	a) True b) False
28. Purpose of engine lubrication is to	a) Minimizes wear in moving parts b) Helps in keeping the parts cool c) Washes away and carries away dirt d) All of the above
29. The following type(s) of Oil pump(s) is (are) used in Engine Lubrication system	a) Gear type b) Rotor type c) Plunger type d) All of the above
30. The following is (are) oil pressure gauge(s)	a) Pressure expansion type b) Electric type c) both (a) and (b) d) None of the above
31. The viscosity of the oil must suit the characteristics of the engine?	a) True b) False
32. Oil passages through the engine are called _____.	Oil galleries
33. _____ is the thickness or fluidity of motor oil.	Oil viscosity

Title of Qualification: Automotive Mechatronics	CS Code: 071400943	Level: 2	Version:
Competency Standard Title: Maintain Fuel System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>18. Assessment Task 1: Perform services of fuel injectors and rail as per vehicle's manual</p> <p>19. Assessment Task 2: Diagnose faults of the vehicle's fuel pump and perform its services as per vehicle's manual</p> <p>20. Assessment Task 3: Perform service of Carburettor as per manual</p> <p>21. Assessment Task 4: Perform service of Throttle body as per procedure</p> <p>And complete:</p> <p>22. Knowledge assessment test (Written or Oral)</p> <p>23. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Remove air cleaner, fuel injectors and other relevant accessories from vehicle as per manual</p> <p>Performance Criteria 4: Perform service of air cleaner, clean and test the fuel injectors with the help of injector cleaner and tester</p> <p>Performance Criteria 5: Refit air cleaner, fuel injectors and other relevant accessories in vehicle as per manual</p> <p>Performance Criteria 6: Ensure proper connection of connectors and input supply of fuel injectors</p> <p>Performance Criteria 7: Ensure housekeeping after completion of task</p> <p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Check physical damage or fault in fuel pump by prescribed diagnostic techniques</p> <p>Performance Criteria 4: Perform repair/service/replace fuel pump</p> <p>Performance Criteria 5: Ensure proper function of fuel pump</p> <p>Performance Criteria 6: Ensure housekeeping after completion of task</p>

	<p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform disassembly of accessories and adjustment of air fuel mixture as per procedure</p> <p>Performance Criteria 4: Perform test of carburettor as per defined procedure</p> <p>Performance Criteria 5: Perform assembly of accessories</p> <p>Performance Criteria 6: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 4</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Disassemble throttle body and its accessories as per vehicle's manual</p> <p>Performance Criteria 4: Perform throttle body service as per specified procedure</p> <p>Performance Criteria 5: Assemble throttle body and its accessories as per vehicle's manual</p> <p>Performance Criteria 6: Ensure proper functioning of throttle body</p> <p>Performance Criteria 7: Ensure housekeeping after completion of task</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Perform services of fuel injectors and rail as per vehicle's manual				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Removed air cleaner, fuel injectors and other relevant accessories from vehicle as per manual						
4	Performance Criteria 4: Performed service of air cleaner, clean and test the fuel injectors with the help of injector cleaner and tester						
5	Performance Criteria 5: Refitted air cleaner, fuel injectors and other relevant accessories in vehicle as per manual						
6	Performance Criteria 6: Ensured proper connection of connectors and input supply of fuel injectors						
7	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Assessment Task 2		Description of assessment task 2 Diagnose faults of the vehicle's fuel pump and perform its services as per vehicle's manual		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Checked physical damage or fault in fuel pump by prescribed diagnostic techniques			
4	Performance Criteria 4: Performed repair/service/replace fuel pump			
5	Performance Criteria 5: Ensured proper function of fuel pump			
6	Performance Criteria 6: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3 Perform service of Carburettor as per manual		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Disassembled throttle body and its accessories as per vehicle's manual			
4	Performance Criteria 4: Performed throttle body service as per specified procedure			
5	Performance Criteria 5: Performed assembly of accessories			
6	Performance Criteria 6: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 4		Description of assessment task 4 Perform service of Throttle body as per procedure		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Disconnected the water and electric connections from water pump			
4	Performance Criteria 4: Performed throttle body service as per specified procedure			
5	Performance Criteria 5: Assembled throttle body and its accessories as per vehicle's manual			
6	Performance Criteria 6: Ensured proper functioning of throttle body			
7	Performance Criteria 7: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio		
Current <input type="checkbox"/>	Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1			
2	Performance criteria 2			
3	Performance criteria 3			
4			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Title of Qualification: Automotive mechatronics	CS Code:	Level: # 2	Version:
Competency Standard Title: Maintain Fuel System	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Fuel System	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
34. Identify the location of fuel pump	<ul style="list-style-type: none"> 5. Engine room 6. Driving seat 7. With transmission system 8. Fuel tank
35. EFI Stands for	<ul style="list-style-type: none"> 5. Electronic fuel injection 6. Elementary fuel injection 7. Periodically fuel injection 8. Electric fuel ignition.
36. What are the stoichiometric air fuel ratio	<ul style="list-style-type: none"> 5. 10.7 : 1 6. 14.1 : 1 7. 14.7 : 1 8. 15.7 : 1
37. FIP Stands for	<ul style="list-style-type: none"> 5. Fuel injection pump 6. Fuel ignition plug 7. Fuel integrator pump 8. None of the above
38. Pre ignition can occur due to	<ul style="list-style-type: none"> 5. Missing 6. Detonation 7. Over lapping 8. Dieseling
39. 12:1 is rich mixture for air and fuel.	True / false
40. Write main steps of air lock in fuel system	
41. Define function of carburettor system	

Title of Qualification: Automotive Mechatronics	CS Code: 071400947	Level: 2	Version: 1
Competency Standard Title: Maintain Suspension System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>24. Assessment Task 1: Check & Maintain Suspension System as per given instructions</p> <p>25. Assessment Task 2: Check & Maintain Steering System</p> <p>26. Assessment Task 3: Perform Wheel Alignment as per defined procedure</p> <p>And complete:</p> <p>27. Knowledge assessment test (Written or Oral)</p> <p>28. Portfolios at the time of assessment (if any)</p>
/Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Check for leakage and perform suspension bounce test</p> <p>Performance Criteria 4: Perform disassembly and assembly of McPherson strut as per manual</p> <p>Performance Criteria 5: Perform disassembly and assembly of Coil spring as per manual</p> <p>Performance Criteria 6: Inspect & replace Stabilizer bar Link and Mounting rubber bushes</p> <p>Performance Criteria 7: Perform replacement of Suspension arm & their bushes</p> <p>Performance Criteria 8: Ensure housekeeping after completion of task</p> <p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform disassembly and assembly of Knuckle assembly as per manual</p> <p>Performance Criteria 4: Perform checking and replacement of ball joint Steering Linkage</p> <p>Performance Criteria 5: Perform replacement of wheel hub assembly</p> <p>Performance Criteria 6: Ensure housekeeping after completion of task</p>

	<p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform wheel alignment as per defined procedure</p> <p>Performance Criteria 4: Perform adjustment of camber angle, caster & Toe-in Toe-out</p> <p>Performance Criteria 5: Ensure housekeeping after completion of task</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Assessment Task 1			Description of assessment task 1 Check & Maintain Suspension System as per given instructions				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Checked for leakage and perform suspension bounce test						
4	Performance Criteria 4: Performed disassembly and assembly of McPherson strut as per manual						
5	Performance Criteria 5: Performed disassembly and assembly of Coil spring as per manual						
6	Performance Criteria 6: Inspected & replaced Stabilizer bar Link and Mounting rubber bushes						
7	Performance Criteria 7: Performed replacement of Suspension arm & their bushes						
8	Performance Criteria 8: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>				Not Yet Competent <input type="checkbox"/>			

Assessment Task 2		Description of assessment task 2 Check & Maintain Steering System		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed disassembly and assembly of Knuckle assembly as per manual			
4	Performance Criteria 4: Performed checking and replacement of ball joint Steering Linkage			
5	Performance Criteria 5: Performed replacement of wheel hub assembly			
6	Performance Criteria 6: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3 Perform Wheel Alignment as per defined procedure		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed wheel alignment as per defined procedure			
4	Performance Criteria 4: Performed adjustment of camber angle, caster & Toe-in Toe-out			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio			
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks	
1	Performance criteria 1 for the evaluation of portfolio: Submitted note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.				
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>			

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Suspension System	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Suspension System	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
42. Shock absorber is a part of steering system.	a) True b) False
43. Toe-In and Toe-Out is adjusted by tie rod adjuster.	a) True b) False
44. Shock absorber control oscillation of the spring	a) True b) False
45. King pin inclination is called	a) Caster b) Camber c) Toe-In d) Toe-Out
46. Tire wear at the center due to	a) Low inflation pressure b) High inflation pressure c) Positive camber d) Excessive play in steering

Title of Qualification: Automotive Mechatronics	CS Code: 071400950	Level: 2	Version:
Competency Standard Title: Perform OBD-II Scanner Operation	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment): 29. Assessment Task 1: Perform Scanning and diagnosis with OBD-II And complete: 30. Knowledge assessment test (Written or Oral) 31. Portfolios at the time of assessment (if any)
Minimum Evidence Required	During a practical assessment, under observation by an assessor, you will complete: Assessment Task 1 Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Connect OBD-II with required connector as per vehicle manual Performance Criteria 4: Enter the vehicle detail in OBD-II Scanner as per procedure Performance Criteria 5: Diagnose engine and ECT as per procedure Performance Criteria 6: Check Diagnostic Trouble Code from OBD-II Scanner Performance Criteria 7: Remove fault and verify with OBD-II Scanner Performance Criteria 8: Ensure housekeeping after completion of task Portfolios required at the time of assessment (if any) for Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Perform Scanning and diagnosis with OBD-II				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Connected OBD-II with required connector as per vehicle manual						
4	Performance Criteria 4: Entered the vehicle detail in OBD-II Scanner as per procedure						
5	Performance Criteria 5: Diagnosed engine and ECT as per procedure						
6	Performance Criteria 6: Checked Diagnostic Trouble Code from OBD-II Scanner						
7	Performance Criteria 7: Removed fault and verified with OBD-II Scanner						
8	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Portfolio (if any)		Description of portfolio			
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks	
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4				
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>			

Title of Qualification: Automotive mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Perform on-board diagnostic (OBD-II) scanner operation.	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: # 2	Version:
Competency Standard Title: Perform on-board diagnostic (OBD-II) scanner operation.	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
47. OBD-II scanner is used in _____model Vehicle	9. 1970 – 1980 10. 1981 – 1990 11. 1991 – 1995 12. 1996 onward
48. ECU stands for	9. Electronics control unit 10. Electrical control unit 11. Electronic central unit 12. External computing unit
49. ECT stands for	9. Electronic control terminal 10. Electronic control transmission 11. Electrical control transmission 12. External control transmission
50. DTC code from P000 to P0299 represent	9. Air fuel mixture control 10. Ignition system control 11. Emission control 12. Engine idling control
51. Map sensor located on intake manifold	True / False
52. Oxygen (O2) located on transmission unit	True / False
53. OBD-II scanner connecter located behind rear seats	True / False

Title of Qualification: Automotive Mechatronics	CS Code: 071400949	Level: 2	Version:
Competency Standard Title: Service Electrical System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>32. Assessment Task 1: Check Performance of Ignition System as per given instructions</p> <p>33. Assessment Task 2: Test performance of Electrical System</p> <p>34. Assessment Task 3: Test performance of Alternator</p> <p>35. Assessment Task 4: Perform service of Self Starting System</p> <p>And complete:</p> <p>36. Knowledge assessment test (Written or Oral)</p> <p>37. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform removal & re-fitment of battery from the vehicle</p> <p>Performance Criteria 4: Inspect performance of the battery as per procedure</p> <p>Performance Criteria 5: Inspect & adjust Ignition timing</p> <p>Performance Criteria 6: Service Ignition system as per workshop manual</p> <p>Performance Criteria 7: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform checking of fuses, Relays, wire harness, lights and connectors</p> <p>Performance Criteria 4: Perform installation of lights as per manual</p> <p>Performance Criteria 5: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Check voltage and Ampere of alternator as per service manual</p> <p>Performance Criteria 4: Check & adjust tension of alternator belt</p> <p>Performance Criteria 5: Ensure housekeeping after completion of task</p>

	<p>Assessment Task 4</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Check connection & wire harness of starting motor</p> <p>Performance Criteria 4: Remove service and install self-starter as per procedure</p> <p>Performance Criteria 5: Ensure housekeeping after completion of task</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>

Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Check Performance of Ignition System as per given instructions				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Performed removal & re fitment of battery from the vehicle						
4	Performance Criteria 4: Inspected performance of the battery as per procedure						
5	Performance Criteria 5: Inspected & adjusted Ignition timing						
6	Performance Criteria 6: Serviced Ignition system as per workshop manual						
7	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Assessment Task 2		Description of assessment task 2 Test performance of Electrical System		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed checking of fuses, Relays, wire harness, lights and connectors			
4	Performance Criteria 4: Performed installation of lights as per manual			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3 Test performance of Alternator		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Checked voltage and Ampere of alternator as per service manual			
4	Performance Criteria 4: Checked & adjust tension of alternator belt			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 4		Description of assessment task 4 Perform service of Self Starting System		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Checked connection & wire harness of starting motor			
4	Performance Criteria 4: Removed service and install self-starter as per procedure			
5	Performance Criteria 5: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio			
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks	
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4				
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>			

Title of Qualification: Automotive mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Service Electrical System	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Service Electrical System	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
54. In series circuit the total voltage V_t is find by	13. $V_{total} = V_1 + V_2 + V_3 \dots$ 14. $V_{total} = 1/V_1 + 1/V_2 + 1/V_3 \dots$ 15. $V_{total} = I/R_1 + I/R_2 + I/R_3$ 16. None of the above
55. According to Ohm's law	13. $V = IR$ 14. $V = I/R$ 15. $V = V/R$ 16. $V = I^2/R$
56. One cell of a battery is contain	13. 5v 14. 3v 15. 2.1v 16. 3.1v
57. The gap between two spark plug is usually 3 mm	True / False
58. CB point stands for contact break point.	True / False
59. The purpose of ignition system is to increase low voltage into high voltage.	True / false
60. What are the two types of distributor system?	

Title of Qualification: Automotive Mechatronics	CS Code: 071400944	Level: 2	Version:
Competency Standard Title: Service Engine Cooling System	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:.....
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>38. Assessment Task 1: Perform Radiator and Fan service as per procedure 39. Assessment Task 2: Evaluate Thermostat valve performance 40. Assessment Task 3: Evaluate Water pump performance</p> <p>And complete:</p> <p>41. Knowledge assessment test (Written or Oral) 42. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Remove radiator and fan from vehicle as per procedure Performance Criteria 4: Perform service of radiator and fan Performance Criteria 5: Refit radiator and fan assembly as per procedure Performance Criteria 6: Check leakages in cooling system Performance Criteria 7: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Remove thermostat valve as per procedure Performance Criteria 4: Check the thermostat valve as per workshop manual Performance Criteria 5: Refit the thermostat valve Performance Criteria 6: Ensure housekeeping after completion of task</p>
	<p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task Performance Criteria 2: Select tools and equipment for the given task Performance Criteria 3: Disconnect the water and electric connections from water pump Performance Criteria 4: Remove water pump from engine Performance Criteria 5: Check water pump pressure, seals, and bearings as per procedure Performance Criteria 6: Refit water pump Performance Criteria 7: Ensure housekeeping after completion of task</p>

	<p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>
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Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Nature of Activity							
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			
Each Assessment Task (with performance criteria)							
Assessment Task 1			Description of assessment task 1 Perform Radiator and Fan service as per procedure				
During the practical assessment, candidate demonstrated the following:					Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task						
2	Performance Criteria 2: Selected tools and equipment for the given task						
3	Performance Criteria 3: Removed radiator and fan from vehicle as per procedure						
4	Performance Criteria 4: Performed service of radiator and fan						
5	Performance Criteria 5: Refitted radiator and fan assembly as per procedure						
6	Performance Criteria 6: Checked leakages in cooling system						
7	Performance Criteria 7: Ensured housekeeping after completion of task						
Competent <input type="checkbox"/>			Not Yet Competent <input type="checkbox"/>				

Assessment Task 2		Description of assessment task 2 Evaluate Thermostat valve performance		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Removed thermostat valve as per procedure			
4	Performance Criteria 4: Checked the thermostat valve as per workshop manual			
5	Performance Criteria 5: Refitted the thermostat valve			
6	Performance Criteria 6: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 3		Description of assessment task 3 Evaluate Water pump performance		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Disconnected the water and electric connections from water pump			
4	Performance Criteria 4: Removed water pump from engine			
5	Performance Criteria 5: Checked water pump pressure, seals, and bearings as per procedure			
6	Performance Criteria 6: Refitted water pump			
7	Performance Criteria 7: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio			
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Valid <input type="checkbox"/>	Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks	
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4				
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>			

Title of Qualification: Automotive mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Service Engine Cooling system	Assessment Date (DD/MM/YY):		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Title of Qualification: Automotive Mechatronics	CS Code:	Level: # 2	Version:
Competency Standard Title: Service Engine Cooling System	Assessment Date (DD/MM/YY):		

WRITTEN ASSESSMENT

Question	Candidate's answer
61. Pressure radiator cap open at pressure	17. 10 bar 18. 0.9 bar 19. 0.8 bar 20. 0.83 bar
62. ATF (automatic transmission fluid) is filled in-----	17. Radiator 18. Oil cooler 19. Water cooler 20. Reservoir
63. Viscous coupling is a part of	17. Radiator 18. Reservoir 19. Cooling fan 20. Blower
64. Replace the thermostat valve, if not completely open at 90 degree C	True / false
65. Replace thermostat valve if not completely closed at normal atmosphere temperature	True / False
66. Pressure radiator cap have three valves	True / False
67. Pressure valve and vacuum valve are parts of radiator pressure cap	True / False
68. Water jacket is a built-in part of	1. Oil sump 2. Oil pump 3. Cylinder head & cylinder block 4. Radiator assembly

Question	Candidate's answer
69. Temperature sending unit mostly placed in	<ol style="list-style-type: none">1. Oil pump2. Oil sump3. Dash board4. Cylinder block, radiator, Water pump
70. Thermostat is mostly placed-----	<ol style="list-style-type: none">1. Oil sump2. Oil pump3. Oil cooler4. Inside or outside of cylinder block

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Integrated Assessment Level - 2	Assessment Date (DD/MM/YY):		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>43. Assessment Task 1: Change head gasket of vehicle as per vehicle's manual</p> <p>44. Assessment Task 2: Perform Scanning and diagnosis with OBD-II</p> <p>45. Assessment Task 3: Perform brake system service as per vehicle's manual</p> <p>And complete:</p> <p>46. Knowledge assessment test (Written or Oral)</p> <p>47. Portfolios at the time of assessment (if any)</p>
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Perform disassembly of timing cover, tensioner bearing and timing belt as per workshop manual</p> <p>Performance Criteria 4: Perform disassembly of components and accessories related to cylinder head assembly as per vehicle's manual</p> <p>Performance Criteria 5: Perform replacement of head gasket as per procedure</p> <p>Performance Criteria 6: Perform assembly of cylinder head components and adjust tappet clearance as per vehicle's manual</p> <p>Performance Criteria 7: Perform assembly of parts related to cylinder head assembly to complete the task as per vehicle's manual</p> <p>Performance Criteria 8: Ensure housekeeping after completion of task</p>

	<p>Assessment Task 2</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Connect OBD-II with required connector as per vehicle manual</p> <p>Performance Criteria 4: Enter the vehicle detail in OBD-II Scanner as per procedure</p> <p>Performance Criteria 5: Diagnose engine and ECT as per procedure</p> <p>Performance Criteria 6: Check Diagnostic Trouble Code from OBD-II Scanner</p> <p>Performance Criteria 7: Remove fault and verify with OBD-II Scanner</p> <p>Performance Criteria 8: Ensure housekeeping after completion of task</p> <hr/> <p>Assessment Task 3</p> <p>Performance Criteria 1: Apply relevant health and safety requirements during completion of task</p> <p>Performance Criteria 2: Select tools and equipment for the given task</p> <p>Performance Criteria 3: Dismantle the disc pads, brake shoes, brake master cylinder and wheel cylinder of the brake system</p> <p>Performance Criteria 4: Replace/Rebuild disc pads, brake shoes, master cylinder and wheel seals / washer of the brake system</p> <p>Performance Criteria 5: Perform air bleeding/removing of the brake system</p> <p>Performance Criteria 6: Adjust the parking/hand brake system</p> <p>Performance Criteria 7: Ensure housekeeping after completion of task</p> <hr/> <p>Portfolios required at the time of assessment (if any) for</p> <p>Performance criteria 1 for the evaluation of portfolio: Submit note book or practical activity journal, completed during this specific module, for relevant activity with drawing/illustration.</p>
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Continued on following page

Assessors Judgment Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓		✓		
Knowledge Assessment	✓	✓					
Other Requirement				✓			

Each Assessment Task (with performance criteria)				
Assessment Task 1		Description of assessment task 1 Change head gasket of vehicle as per vehicle's manual		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Performed disassembly of timing cover, tensioner bearing and timing belt as per workshop manual			
4	Performance Criteria 4: Performed disassembly of components and accessories related to cylinder head assembly as per vehicle's manual			
5	Performance Criteria 5: Performed replacement of head gasket as per procedure			
6	Performance Criteria 6: Performed assembly of cylinder head components and adjust tappet clearance as per vehicle's manual			
7	Performance Criteria 7: Performed assembly of parts related to cylinder head assembly to complete the task as per vehicle's manual			
8	Performance Criteria 7: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Each Assessment Task (with performance criteria)				
Assessment Task 2		Description of assessment task 2 Perform Scanning and diagnosis with OBD-II		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Connected OBD-II with required connector as per vehicle manual			
4	Performance Criteria 4: Entered the vehicle detail in OBD-II Scanner as per procedure			
5	Performance Criteria 5: Diagnosed engine and ECT as per procedure			
6	Performance Criteria 6: Checked Diagnostic Trouble Code from OBD-II Scanner			
7	Performance Criteria 7: Removed fault and verified with OBD-II Scanner			
8	Performance Criteria 8: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Each Assessment Task (with performance criteria)				
Assessment Task 3		Description of assessment task 3 Perform brake system service as per vehicle's manual		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task			
2	Performance Criteria 2: Selected tools and equipment for the given task			
3	Performance Criteria 3: Dismantled the disc pads, brake shoes, brake master cylinder and wheel cylinder of the brake system			
4	Performance Criteria 4: Replaced/Rebuild disc pads, brake shoes, master cylinder and wheel cylinder seals / washer of the brake system			
5	Performance Criteria 5: Performed air bleeding of the brake system			
6	Performance Criteria 6: Adjusted the parking/hand brake system			
7	Performance Criteria 7: Ensured housekeeping after completion of task			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Portfolio (if any)		Description of portfolio		
Current <input type="checkbox"/>		Sufficient <input type="checkbox"/>		Authentic <input type="checkbox"/>
		Valid <input type="checkbox"/>		Reliable <input type="checkbox"/>
Portfolio meet the following performance standards:		Yes	No	Remarks
1	Performance criteria 1			
2	Performance criteria 2			
3	Performance criteria 3			
4			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

