







AUTOMOTIVE MECHATRONICS



ASSESSMENT PACKAGE

National Vocational Certificate Level 2

Version 1 - November, 2019





Published by

National Vocational and Technical Training Commission Government of Pakistan

Headquarter

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan www.navttc.org

Responsible

Director General Skills Standard and Curricula, National Vocational and Technical Training Commission

National Deputy Head, TVET Sector Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Layout & design

SAP Communications

Photo Credits

TVET Sector Support Programme

URL links

Responsibility for the content of external websites linked in this publication always lies with their respective publishers. TVET Sector Support Programme expressly dissociates itself from such content.

This document has been produced with the technical assistance of the TVET Sector Support Programme, which is funded by the European Union, the Federal Republic of Germany and the Royal Norwegian Embassy and has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs), Punjab Vocational Training Council (PVTC), Qualification Awarding Bodies (QABs)s and private sector organizations.

Document Version November, 2019 **Islamabad, Pakistan**

AUTOMOTIVE MECHATRONICS



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 D	Oate (DD/MM/YY	·):

Candidate Details	Name:						
	Registration/Roll Number:						
	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):						
Guidance for Candidate	 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 						
	And complete:						
	3. Knowledge assessment test (Written or Oral)4. Portfolios at the time of assessment (if any)						
	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: Perform replacement of gear oil as per procedure						
	Performance Criteria 4: Perform disassembly of clutch system and its components as per manual						
	Performance Criteria 5: Perform disassembly of gear box assembly as per manual						
	Performance Criteria 6: Perform repair/service/replace of faulty components as per procedure						
Minimum Evidence	Performance Criteria 7: Perform assembly of gear box and clutch assembly as per manual						
Required	Performance Criteria 8: Ensure housekeeping after completion of task						
	Assessment Task 2						
	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 replacement of clutch master cylinder and slave cylinder seal as per manual						
	Performance Criteria 4: Perform clutch bleeding as per defined procedure						
	Performance Criteria 5: 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.						

Candida Details		Name: Re					_			
Assess Outcom		COMPETENT Name of the Assessor: Signature of the Assessor:				Asses	ssor's c			
		Assessm	eant Su		ry (to be	filled I	by the :	255955	·orl	
	Activ			IIIIIai	Method		Jy inc c	153633		sult
Nature of Activity			Written	Oral	Observation	Portfolio	Role Play		Competent	Not Yet Competent
Practica	al Skill Der	monstration			✓		✓			
	edge Asses		✓	✓						
Other R	Requiremer	nt				✓				
	Assessment sment Task	t Task (with perfc ←1	rmance	e crite	Descrip	•				sion system as
During followin		cal assessment, c	andida	ite der	nonstrat	ed the	Yes	No	Remarks	
1		ance Criteria 1: Αρ quirements durinç				and				
2		ance Criteria 2: Sent for the given ta		tools	and					
3		ance Criteria 3: Pe as per procedure	erforme	₃d repl	lacemen	t of				
4		nce Criteria 4: Pe stem and its com								
5	Performance Criteria 5: Performed disassembly of gear box assembly as per manual					/ of				
6	Performance Criteria 6: Performed repair/service/replace of faulty components as per procedure					per				
7		nce Criteria 7: Pe clutch assembly a				gear				
8		ance Criteria 8: Er on of task	nsured	house	keeping	after				
Compe	etent \square				Not Yet	Compe	etent \square		_	

Assessment Task 2 Description of Check perform vehicle's man					sk 2 ulic clutch system as per
During followir	the practical assessment, candidate deng:	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Performed replacement of clutch master cylinder and slave cylinder seal as per manual				
4	Performance Criteria 4: Performed cluber defined procedure				
5	Performance Criteria 5: Ensured house completion of task				
Compe	etent	Not Yet Compe	tent 🗆		
Portfoli	o (if any)	Description of p	oortfolic)	
Current	t ☐ Sufficient ☐ Authention	∵ □ Valid			Reliable 🗆
Portfoli	o meet the following performance standa	ards:	Yes	No	Remarks
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4					
Compe	tent 🗆	Not Yet Compe	etent 🗆		

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

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT Assessor's code:

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

Question	Candidate's answer
What is the purpose of clutch system?	a) Disengage b) Engage c) Bonding d) Engage & disengage
Where mechanical clutch is used?	a) In master cylinder b) In salve cylinder c) In wheel cylinder d) In cable or linkages
By which of the material clutch plate lining is made?	a) Steel material b) Aluminum material c) Spring material d) Frictional material
Where hydraulic clutch is used?	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?	 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
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?	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 D	Pate (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):
	 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 And complete:
	8. Knowledge assessment test (Written or Oral) 9. Portfolios at the time of assessment (if any)
	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: 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
	Assessment Task 2
Minimum	Performance Criteria 1: Apply relevant health and safety requirements during completion of task
Evidence Required	Performance Criteria 2: Select tools and equipment for the given task
Required	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
	Assessment Task 3
	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

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.

Candida Details	ate	Name: Candidate Signature:				· ·				
Assessr Outcom		COMPETENT Name of the Assessor: Signature of the Assessor:					. Asses	sor's co		
		Assessme	ent Su	mmar	v (to be	filled t	ov the a	ISSESS		
	Activ		<u> </u>	···········	Method		<i>,</i> y c		Res	sult
Nature (Nature of Activity			Oral	Observation	Portfolio	Role Play	Competent		Not Yet Competent
Practica	al Skill Den	monstration	Written		√		✓			
Knowle	dge Asses	sment	✓	✓						
Other R	Requiremer	nt				✓				
Each A	ssessmen	t Task (with perfo	ormanc	e crite	ria)					
Assess	ment Task	(1			Descrip Perform					ake System
During followin		cal assessment, c	andida	te den	nonstrate	ed the	Yes	No	Remarks	
1		nnce Criteria 1: Apquirements during				and				
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					tment				
4	Performance Criteria 4: Performed adjust brake shoes and parking brake cable as procedure					of				
5	Performa completion	ance Criteria 7: Er on of task	nsured	house	keeping	after				
Compe	ompetent □ Not Yet Competent □									

Assess	sment Task 2	Description of a Perform Mainte			sk 2 raulic Brake System
During followir	the practical assessment, candidate dering:	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Performed adjusted pedal height and free play as pe				
4	Performance Criteria 4: Checked hydra system for leakage	aulic brake			
5	Performance Criteria 5: Ensured house completion of task	ekeeping after			
Compe	etent 🗆	Not Yet Compe	tent 🗆		
Assess	sment Task 3	Description of Perform Maint			ask 3 umatic Brake System
During the practical assessment, candidate demonstrated the following:			Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Performed ins brake lines, safety valve and water dra	•			
4	Performance Criteria 4: Performed ins leakages in brake system	pection of air			
5	Performance Criteria 5: Ensured hous completion of task	ekeeping after			
Compe	etent 🗆	Not Yet Compe	etent 🗆		
Portfolio (if any)		Description of	Description of portfolio		
Curren	t □ Sufficient □ Authentio	c □ Valid			Reliable 🗆
Portfoli	o meet the following performance stand	ards:	Yes	No	Remarks
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3				
4					
Compe	etent 🗆	Not Yet Compe	etent 🗆		

Title of Qualification:	CS Code:	Level:	Version:
Automotive Mechatronics		2	
Competency Standard Title:	Assessment D	oate (DD/MM/YY) :
Maintain Brake System			
	1		

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT . Assessor's code:

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

Question	Candidate's answer
10. In which of the following the kinetic energy is converted, when brakes are applied on a moving vehicle?	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?	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?	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	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?	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?	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 D	Date (DD/MM/YY):

Candidate Details	Name:
	Registration/Roll Number:
	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):
0 : 1	10. Assessment Task 1: Perform engine assembly of the vehicle as per vehicle's manual
Guidance for Candidate	11. Assessment Task 2: Set engine timings as per vehicle's manual specifications
Candidate	12. Assessment Task 3: Perform engine and transmission coupling
	And complete:
	13. Knowledge assessment test (Written or Oral) 14. Portfolios at the time of assessment (if any)
	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: Disassemble main components of engine assembly as per manual
	Performance Criteria 4: Check cylinder head for flatness or warped/twisted
Minimum Evidence	Performance Criteria 5: Inspect and verify main components of engine assembly for fault
Required	Performance Criteria 6: Refit/retard engine assembly as per manual
	Performance Criteria 7: Ensure housekeeping after completion of task
	Assessment Task 2
	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: Set engine valve timing as per procedure
	Performance Criteria 4: Set engine timing for advance/retire setting as per procedure
	Performance Criteria 5: Ensure housekeeping after completion of task

Assessment Task 3

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: Ensure proper level of engine and transmission before assembly

Performance Criteria 4: Ensure proper fitment of primary shaft into the clutch plate drive hub as per manual

Performance Criteria 5: Fit engine and transmission bolts as per vehicle's manual

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.

Candida Details	ate	Name:								
Assessr Outcome		COMPETENT Name of the Assessor: Signature of the Assessor:				Asses	sor's c			
			4.0		4. 1				•	
	Activ	Assessm	ent Su	mma	ry (to be Metho		by the a	assess		sult
Activity Nature of Activity		Written	Oral	Observation	Portfolio	Role Play	Competent		Not Yet Competent	
Practical Skill Demonstration				√	<u> </u>	✓				
Knowledge Assessment		✓	✓							
Other R	equiremer	nt				✓				
Each As	ssessment	t Task (with perfo	rmanc	e crite	eria)					
Assessr	nent Task	1			•	-				as per vehicle's
During t		al assessment, c	andida	te der	monstrat	ed the	Yes	No	Remarks	
1		nce criteria 1: Ap quirements during				and				
2	Performa for the giv	nce criteria 2: Se ven task	lected	tools	and equi	ipment				
3		nce criteria 3: Dis				I				
4	Performance criteria 4: Checked cylind flatness or warped/twisted				ler head	for				
5 Performance Criteria 5: Inspected and components of engine assembly for fa				main						
6	Performance Criteria 6: Refitted/retard			etard	engine					
7	Performance Criteria 7: Ensured housekeeping after									
Compet	Competent □ Not Yet Competent □									

Assessment Task 2			Description of assessment task 2 Set engine timings as per vehicle's manual			
During followin	the practical assessment, candidate der ng:	monstrated the	Yes	No	Remarks	
1	Performance Criteria 1: Applied releval safety requirements during completion					
2	Performance Criteria 2: Selected tools equipment for the given task	and]	
3	Performance Criteria 3: Set engine valuer per procedure	ve timing as				
4	Performance Criteria 4: Set engine tim advance/retire setting as per procedure					
5	Performance Criteria 5: Ensured house completion of task	ekeeping after				
Compe	etent 🗆	Not Yet Compe	tent 🛘			
Assess	sment Task 3	Description of a				
During followin	the practical assessment, candidate derng:	monstrated the	Yes	No	Remarks	
1	Performance Criteria 1: Applied relevant health and safety requirements during completion of task					
2	Performance Criteria 2: Selected tools equipment for the given task	and]	
3	Performance Criteria 3: Ensured prope engine and transmission before assem					
4	Performance Criteria 4: Ensured proper primary shaft into the clutch plate driver manual					
5	Performance Criteria 5: Fitted engine a transmission bolts as per vehicle's man					
Compe	etent 🗆	Not Yet Compe	tent 🗆			
Portfoli	o (if any)	Description of p	portfolic)		
Current	t ☐ Sufficient ☐ Authention	c □ Valid			Reliable 🗆	
Portfoli	o meet the following performance standa	ards:	Yes	No	Remarks	
1	Performance criteria 1					
2	Performance criteria 2		<u>'</u>]	
3	Performance criteria 3]	
4		<u>, </u>				
Compe	tent □	Not Yet Compe	etent \square	j		

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

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT Assessor's code:

Title of Qualification: Automotive Mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Maintain Engine Assembly	Assessmen	t Date (DD/MI	M/YY):

Question	Candidate's answer
17. Engine is a machine which convert chemical energy into	1. Mechanical 2. Light 3. Heat 4. chemical
18. Crank shaft converts reciprocating motion into	1. Liner motion 2. Up & down motion 3. Harmonic motion 4. Rotatory motion
19. In most of the car, the engine type used is	 Rotatory engine Opposed engine V type engine In-line engine
20. Type of cooling system used in car engine	 Chemical cooled Self-cooled Fan cooled Liquid or air cooled
21. Thermostat is a part of	Lubrication system Transmission system Cabin 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 D	Oate (DD/MM/YY):

Candidate Details	Name:
	Registration/Roll Number:
	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):
Guidance for	15. Assessment Task 1: Test performance of oil pressure switch, oil pump and investigate oil leakages in lubrication system
Candidate	And complete:
	16. Knowledge assessment test (Written or Oral)17. Portfolios at the time of assessment (if any)
	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
Minimum	Performance Criteria 3: Observe oil lamp indicator on instrument panel as per defined procedure
Evidence	Performance Criteria 4: Perform thoroughly inspection for oil leakages
Required	Performance Criteria 5: Inspect oil strainer, pump and pressure relief valve after dismantling as per vehicle's manual
	Performance Criteria 6: Replace gasket/seal as per procedure
	Performance Criteria 7: 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.

Candid Details	ate	Name: Candidate Signature:									
Assess Outcom		COMPETENT Name of the Assessor: Signature of the Assessor:				. Asses	sor's c				
	A ativ	Assessm	ent Su	mma		to be ethod		by the a	assess		14
Nature	Activolation of Activity	щ	Written	Oral		Observation	Portfolio	Role Play	Competent		Not Yet Competent
Practica	al Skill Den	nonstration				√	<u> </u>	√			20
Knowle	dge Asses	sment	✓	✓							
Other F	Requiremer	nt					✓				
Each A	ssessment	t Task (with perfo	rmance	e crite	eria))					
Assess	ment Task	.1			Te	est per	rformar		il press		oil pump and stem
During followin		al assessment, o	andida	te dei	mon	nstrate	ed the	Yes	No	Remarks	
1		nce Criteria 1։ Aր quirements during					and				
Performance Criteria 2: Selected tools and equipment for the given task											
Performance Criteria 3: Observed oil lamp indicator on instrument panel as per defined procedure					ator						
Performance Criteria 4: Performed thorou inspection for oil leakages				rou	ghly						
Performance Criteria 5: Inspected oil strainer, pump and pressure relief valve after dismantling as per vehicle's manual											
6	Performa procedure	nce Criteria 6: Re	eplaced	d gask	ket/s	seal a	s per				
7	Performa completion	nce Criteria 7: Er on of task	nsured	house	eke	eping	after				
Compe	tent 🗆				No	t Yet	Compe	tent 🗆			

Portfoli	o (if any)			Descrip	otion of	portfolio)	
Curren	t 🗆	Sufficient	Authenti	c 🗆	Valid			Reliable
Portfolio meet the following performance stand			ards:		Yes	No	Remarks	
1	Perform	ance criteria 1						
2 Performance criteria 2								
3 Performance criteria 3								
4								
Compe	etent \square			Not Ye	t Compe	etent \Box		

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

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT Assessor's code:

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

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

Assessment Task 3

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 disassembly of accessories and adjustment of air fuel mixture as per procedure

Performance Criteria 4: Perform test of carburettor as per defined procedure

Performance Criteria 5: Perform assembly of accessories

Performance Criteria 6: Ensure housekeeping after completion of task

Assessment Task 4

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: Disassemble throttle body and its accessories as per vehicle's manual

Performance Criteria 4: Perform throttle body service as per specified procedure

Performance Criteria 5: Assemble throttle body and its accessories as per vehicle's manual

Performance Criteria 6: Ensure proper functioning of throttle body

Performance Criteria 7: 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.

Candida Details	ate	Name: Registration/Roll Number:									
Assessi Outcom		COMPETENT Name of the Assessor: Signature of the Assessor:			Asses	ssor's c					
	A - 1*-	Assessm	ent Su	mma		•		by the a	assess 		14
	Activ	rity			-	Method	1	1		Res	
Nature	of Activity		Written	Oral		Observation	Portfolio	Role Play	Competent		Not Yet Competent
Practica	al Skill Den	nonstration				✓		✓			
Knowle	dge Asses	sment	✓	✓							
Other R	Requiremer	nt					✓				
Each A	ssessment	t Task (with perfo	rmance	e crite	eria	a)					
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 following:			te de	mo	onstrate	ed the	Yes	No	Remarks		
Performance Criteria 1: Applied releva safety requirements during completion						and					
2		nce Criteria 2: Sent for the given ta		tools	aı	nd					
3	Performance Criteria 3: Removed air injectors and other relevant accessori as per manual										
Performance Criteria 4: Performed s d cleaner, clean and test the fuel inject of injector cleaner and tester											
Performance Criteria 5: Refitted air cle injectors and other relevant accessorie per manual											
6	Performance Criteria 6: Ensured proportion of connectors and input supply of fuel					tion					
7	Performa completion	nce Criteria 7: Er on of task	nsured	hous	ek	eeping	after				
Compe	Competent □ Not Yet Competent □										

		Description of assessment task 2 Diagnose faults of the vehicle's fuel pump and perform its services as per vehicle's manual			
During followir	the practical assessment, candidate deng:	monstrated the	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				
Compe	etent 🗆	Not Yet Compe	tent 🗖		

Assess	sment 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
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				
Compe	etent	Not Yet Compe	tent 🗆		

Assess	sment Task 4	·	Description of assessment task 4 Perform service of Throttle body as per procedure			
During followin	the practical assessment, candidate der ng:	monstrated the	Yes	No	Remarks	
1	Performance Criteria 1: Applied releva safety requirements during completion					
2	Performance Criteria 2: Selected tools equipment for the given task	and				
3	Performance Criteria 3: Disconnected electric connections from water pump	the water and				
4	Performance Criteria 4: Performed throservice as per specified procedure	ottle body				
5	Performance Criteria 5: Assembled thr its accessories as per vehicle's manua	•				
6	Performance Criteria 6: Ensured prope of throttle body	er functioning				
7	Performance Criteria 7: Ensured housekeeping after completion of task					
Compe	etent	Not Yet Compe	tent 🗆			
Portfolio (if any)		Description of p	portfolic)		

Portfoli	io (if any)			Descrip	otion of _l	portfolio)	
Curren	t 🗆	Sufficient	Authenti	c 🗆	Valid			Reliable
Portfoli	io meet th	e following perform	nance stand	ards:		Yes	No	Remarks
1	Performa	ance criteria 1						
2	Performance criteria 2							
3	3 Performance criteria 3							
4								
Compe	etent 🗆			Not Ye	t Compe	etent \square		

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

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT Assessor's code:

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

Overtien	Candidata's anawar
Question	Candidate's answer
34. Identify the location of fuel pump	5. Engine room6. Driving seat7. With transmission system8. Fuel tank
35. EFI Stands for	5. Electronic fuel injection6. Elementary fuel injection7. Periodically fuel injection8. Electric fuel ignition.
36. What are the stoichiometric air fuel ratio	5. 10.7 : 1 6. 14.1 : 1 7. 14.7 : 1 8. 15.7 : 1
37. FIP Stands for	5. Fuel injection pump6. Fuel ignition plug7. Fuel integrator pump8. None of the above
38. Pre ignition can occur due to	5. Missing6. Detonation7. Over lapping8. 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:	Level:	Version:
	071400947	2	1
Competency Standard Title: Maintain Suspension System	Assessment D	Pate (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): 24. Assessment Task 1: Check & Maintain Suspension System as per given instructions 25. Assessment Task 2: Check & Maintain Steering System 26. Assessment Task 3: Perform Wheel Alignment as per defined procedure And complete: 27. Knowledge assessment test (Written or Oral) 28. Portfolios at the time of assessment (if any)
	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: Check for leakage and perform suspension bounce test
	Performance Criteria 4: Perform disassembly and assembly of McPherson strut as per manual
	Performance Criteria 5: Perform disassembly and assembly of Coil spring as per manual
/Minimum Evidence	Performance Criteria 6: Inspect & replace Stablizer bar Link and Mounting rubber bushes
Required	Performance Criteria 7: Perform replacement of Suspension arm & their bushes
	Performance Criteria 8: Ensure housekeeping after completion of task
	Assessment Task 2
	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 disassembly and assembly of Knuckle assembly as per manual
	Performance Criteria 4: Perform checking and replacement of ball joint Steering Linkage
	Performance Criteria 5: Perform replacement of wheel hub assembly
	Performance Criteria 6: Ensure housekeeping after completion of task

Assessment Task 3

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 wheel alignment as per defined procedure

Performance Criteria 4: Perform adjustment of camber angle, caster & Toe-in Toe-out

Performance Criteria 5: 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.

Candid Details	ate	Name: Candidate Signature:						_			
Assess Outcom		COMPETENT Name of the Assessor: Signature of the Assessor:					Asses	ssor's d			
	A - 11*-	Assessm	ent Su	mma				by the a	assess		14
	Activ	ity			N	Method	1	l		Res	
Nature of Activity			Written	Oral		Observation	Portfolio	Role Play	Competent		Not Yet Competent
Practica	al Skill Den	nonstration				✓					
Knowle	dge Asses	sment	✓	✓							
Other F	Requiremer	nt					✓				
Assess	ment Task	1			С		& Main	assessi tain Su			as per given
During the practical assessment, candidate following:			te der	mo	nstrate	ed the	Yes	No	Remarks		
1		nce Criteria 1: Ap quirements during					and				
2		nce Criteria 2: Se nt for the given ta		tools	an	nd					
3	Performance Criteria 3: Checked for leakage and perform suspension bounce test				nd						
4	Performance Criteria 4: Performed disassembly and assembly of McPherson strut as per manual				and						
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 bush											
7	Performance Criteria 7: Performed re Suspension arm & their bushes				lac	ement	of				
8	Performa completio	nce Criteria 8: Er on of task	nsured	house	eke	eping	after				
Compe	tent \square				N	ot Yet	Compe	tent 🗆			

Assess	sment Task 2	Description of assessment task 2 Check & Maintain Steering System				
During followir	the practical assessment, candidate deang:		Yes	No	Remarks	
1	Performance Criteria 1: Applied releva safety requirements during completion					
2	Performance Criteria 2: Selected tools equipment for the given task	and				
3	Performance Criteria 3: Performed disassembly of Knuckle assembly as per	•				
4	Performance Criteria 4: Performed che replacement of ball joint Steering Links	•				
5	Performance Criteria 5: Performed rep wheel hub assembly	lacement of				
6	Performance Criteria 6: Ensured house completion of task	ekeeping after				
Compe	etent	Not Yet Compe	tent 🗆			
Assess	sment Task 3	· ·	Description of assessment task 3 Perform Wheel Alignment as per defined proc			
During followir	the practical assessment, candidate deng:	monstrated the	Yes	No	Remarks	
1	Performance Criteria 1: Applied releva safety requirements during completion					
2	Performance Criteria 2: Selected tools equipment for the given task	and				
3	Performance Criteria 3: Performed who as per defined procedure	eel alignment				
4	Performance Criteria 4: Performed adj camber angle, caster & Toe-in Toe-ou					
5	Performance Criteria 5: Ensured house completion of task	ekeeping after				
Compe	etent 🗆	Not Yet Compe	tent 🗆			
Portfoli	io (if any)	Description of	portfolio)		
Curren	t ☐ Sufficient ☐ Authention	c □ Valid			Reliable	
Portfoli	io meet the following performance stand	ards:	Yes	No	Remarks	
1	Performance criteria 1 for the evaluation Submitted note book or practical activities completed during this specific module, activity with drawing/illustration.	ty journal,				
Compe	etent 🗆	Not Yet Compe	etent \Box	<u> </u>		

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

Guidance	To complete your assessment for this Competency Standard, you need to
for	answer the questions on the following pages successfully.
Candidate	

Candidate Details	Name: Candidate Signature:	
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT . Assessor's code:

AP - Level 2 Page | 1

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

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 D	Pate (DD/MM/YY):

Candidate Details	Name:						
	Registration/Roll Number:						
	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):						
Guidance	29. Assessment Task 1: Perform Scanning and diagnosis with OBD-II						
for Candidate	And complete:						
	30. Knowledge assessment test (Written or Oral) 31. Portfolios at the time of assessment (if any)						
	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						
Minimum Evidence	Performance Criteria 4: Enter the vehicle detail in OBD-II Scanner as per procedure						
Required	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.						

Candidat Details	te	Name: Registration/Roll Number:								
Assessm Outcome		COMPETENT Name of the Assessor: Signature of the Assessor:					Asses	sor's c		
		Assessm	ont Su			filled b				
	Activ		ent Su	IIIIIai	Method		Jy tile a	155655		sult
Nature of Activity			Written	Oral	Observation	Portfolio	Role Play		Competent	Not Yet Competent
Practical	Skill Den	monstration			√		- ✓			
Knowled	lge Asses	sment	✓	✓						
Other Re	equiremer	nt				✓				
Each As	sessmen	t Task (with perfo	ormanc	e crite	ria)					
Assessn	ment Task	(1			Descrip Perform				ask 1 osis with O	·BD-II
During the		cal assessment, c	andida	ite den	nonstrat	ed the	Yes	No	Remarks	
		ance Criteria 1: Ap quirements during				and				
2		ance Criteria 2: Sent for the given ta		tools	and					
	Performance Criteria 3: Connected OBD-II with required connector as per vehicle manual					1				
/	Performance Criteria 4: Entered the vehicle detail in OBD-II Scanner as per procedure					ail in				
	Performance Criteria 5: Diagnosed engine and ECT as per procedure									
	Performance Criteria 6: Checked Diagnostic Trouble Code from OBD-II Scanner									
		ance Criteria 7: Re D-II Scanner	emove	d fault	and veri	ified				
		ance Criteria 7: Er on of task	nsured	house	keeping	after				
Compete	ent 🗆				Not Yet	Compe	etent \square	•	•	

Portfolio (if any)				Description of portfolio				
Curren	t 🗆	Sufficient	Authentic		Valid			Reliable
Portfolio meet the following performance stands			ards:		Yes	No	Remarks	
1	Perform	ance criteria 1						
2	Performance criteria 2							
3	Performance criteria 3							
4								
Competent □			Not Yet	t Compe	etent \square			

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

Guidance for Candidate

To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.

Candidate Details	Name: Candidate Signature:	. Registration/Roll Number:
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT . Assessor's code:

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

Question	Candidate's answer
47. OBD-II scanner is used inmodel 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 D	Oate (DD/MM/YY):

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

Assessment Task 4

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: Check connection & wire harness of starting motor

Performance Criteria 4: Remove service and install self-starter as per procedure

Performance Criteria 5: 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.

Candida Details	ate	Name: Registration/Roll Number: Candidate Signature:								
Assessr Outcom		COMPETENT NOT YET COMPETENT Name of the Assessor: Signature of the Assessor:								
		A				fill and the	41		>	
	Activ	Assessm	ent Su	mma	ry (to be Metho		by the a	issess	or) Res	
Activity Nature of Activity		Written	Oral	Observation	Portfolio	Role Play		Competent	Not Yet Competent	
Practica	al Skill Den	nonstration		Ŭ	√		✓			
Knowled	dge Asses	sment	✓	✓						
Other R	equiremer	nt				✓				
Each As	ssessmen	t Task (with perfo	ormanc	e crite	eria)					
Assessment Task 1 Description of assessing Check Performance of instructions							as per given			
During t		al assessment, c	andida	te de	monstrat	ed the	Yes	No	Remarks	
1		nce Criteria 1։ Aր quirements during				and				
2		nce Criteria 2: Sent for the given ta		tools	and					
3		nce Criteria 3: Pe battery from the			noval & r	е				
4	Performance Criteria 4: Inspected performance of the battery as per procedure									
5	Performance Criteria 5: Inspected & adjusted Ignition				gnition					
6	Performance Criteria 6: Serviced Ignition system as per workshop manual									
7	Performa completion	nce Criteria 7: Er on of task	nsured	hous	ekeeping	gafter				
Compe	tent 🗆		petent □ Not Yet Competent □							

		Description of a			
During followin	the practical assessment, candidate dering:	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Performed che Relays, wire harness, lights and conne				
4	Performance Criteria 4: Performed instillights as per manual	tallation of			
5	Performance Criteria 5: Ensured house completion of task	ekeeping after			
Compe	tent 🗆	Not Yet Compe	tent 🗆		
Assess	sment Task 3	Description of Test performan			
During following	the practical assessment, candidate deng:	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Checked volta Ampere of alternator as per service ma				
4	Performance Criteria 4: Checked & ad alternator belt	just tension of			
5	Performance Criteria 5: Ensured house completion of task	ekeeping after			
Compe	etent 🗆	Not Yet Compe	tent 🗆		
		T			
Assess	sment Task 4	Description of Perform service			
During following	the practical assessment, candidate deng:	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
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 servicelli-starter as per procedure	rice and install			
5	Performance Criteria 5: Ensured house completion of task	ekeeping after			
Compe	etent 🗆	Not Yet Compe	tent 🗆	1	'

Portfoli	io (if any)			Descri	ption of	portfolio)	
Curren	t 🗆	Sufficient	Authenti	c 🗆	Valid			Reliable
Portfoli	io meet th	e following perforn	nance stand	ards:		Yes	No	Remarks
1	Perform	ance criteria 1						
2	2 Performance criteria 2							
3 Performance criteria 3								
4								
Competent ☐ Not Yet 0					et Compe	etent 🗆		

Title of Qualification: Automotive mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Service Electrical System	Assessment D	Pate (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.

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT Assessor's code:

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

Question	Candidate's answer
54. In series circuit the total voltage Vt is find by	13. V total = V1+V2+V3 14. V total = 1/V1+1/V2+1/V3 15. V total = I/R1+ I/R2 + I/R3 16. None of the above
55. According to Ohm's law	13. V=IR 14. V=I/R 15. V=V/R 16. V=I2/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 D	Oate (DD/MM/YY):

	T
Candidate Details	Name:
	Registration/Roll Number:
	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):
Guidance for	 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
Candidate	And complete:
	41. Knowledge assessment test (Written or Oral) 42. Portfolios at the time of assessment (if any)
	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: 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
	Assessment Task 2
Minimum	Performance Criteria 1: Apply relevant health and safety requirements during completion of task
Evidence	Performance Criteria 2: Select tools and equipment for the given task
Required	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
	Assessment Task 3
	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

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.

Candid Details	ate	Name:								
Assess Outcom		COMPETENT I	sessor				Asses	ssor's c		
		Assessm	ont Su	mma	ry (to b	a fillad l	ny the s	2000	orl	
	Activ		ciii oa	ıııııa	Metho		by the t			sult
Nature	of Activity		Written	Oral	Observation	Portfolio	Role Play			Not Yet Competent
Practica	al Skill Den	nonstration			✓	_	√			
Knowle	dge Asses	sment	✓	✓						
Other F	Requiremer	nt				✓				
Each A	ssessment	t Task (with perfo	rmance	e crite	eria)					
Assess	ment Task	1				ption of m Radia				er procedure
During followin		al assessment, c	andida	te de	monstra	ted the	Yes	No	Remarks	
1		nce Criteria 1։ Aր quirements during				h and				
2		nce Criteria 2: Se nt for the given ta		tools	and					
3		nce Criteria 3: Recle as per proced		d radia	ator and	l fan				
4	Performa and fan	nce Criteria 4: Pe	erforme	d ser	vice of ı	adiator				
5		nce Criteria 5: Re		adiat	or and f	an				
6	Performa system	nce Criteria 6: Ch	necked	leaka	ages in	cooling				
7	Performa completion	nce Criteria 7: Er n of task	nsured	hous	ekeepin	g after				
Compe	tent 🗆				Not Ye	t Compe	tent 🗆		•	

Assess	sment Task 2	Description of assessment task 2 Evaluate Thermostat valve performance			
During followir	the practical assessment, candidate del	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Removed ther as per procedure	mostat valve			
4	Performance Criteria 4: Checked the to valve as per workshop manual	hermostat			
5	Performance Criteria 5: Refitted the the	ermostat valve			
6	Performance Criteria 6: Ensured house completion of task	ekeeping after			
Compe	etent	Not Yet Compe	tent 🗆		

Assess	sment Task 3	Description of assessment task 3 Evaluate Water pump performance			
During following	the practical assessment, candidate de ng:	monstrated the	Yes	No	Remarks
1	Performance Criteria 1: Applied releva safety requirements during completion				
2	Performance Criteria 2: Selected tools equipment for the given task	and			
3	Performance Criteria 3: Disconnected electric connections from water pump	the water and			
4	Performance Criteria 4: Removed water engine	er pump from			
5	Performance Criteria 5: Checked wate pressure, seals, and bearings as per p				
6	Performance Criteria 6: Refitted water	pump			
7	Performance Criteria 7: Ensured house completion of task	ekeeping after			
Compe	etent 🗆	Not Yet Compe	tent 🗆		

Portfoli	o (if any)			Descrip	otion of	portfolio)	
Curren	t 🗆	Sufficient	Authenti	c 🗆	Valid			Reliable
Portfoli	o meet th	e following perform	nance stand	ards:		Yes	No	Remarks
1	Perform	ance criteria 1						
2	Perform	ance criteria 2						
3	Perform	ance criteria 3						
4								
Compe	etent \square			Not Ye	t Compe	etent \Box		

Title of Qualification: Automotive mechatronics	CS Code:	Level: 2	Version:
Competency Standard Title: Service Engine Cooling system	Assessment D	Pate (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.

Candidate Details	Name: Candidate Signature:	3
Written Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT Assessor's code:

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

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 gap 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	 Oil pump Oil sump Dash board Cylinder block, radiator, Water pump
70. Thermostat is mostly placed	 Oil sump Oil pump Oil cooler Inside or outside of cylinder block

Title of Qualification:	CS Code:	Level: 2	Version:
Automotive Mechatronics			
Competency Standard Title	Accoccment [Data (DD/MM/VV	'\•
Competency Standard Title:	Assessment D	Date (DD/MM/YY	<u>(</u>):
Competency Standard Title: Integrated Assessment Level - 2	Assessment D	Pate (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):						
	43. Assessment Task 1: Change head gasket of vehicle as per vehicle's manual						
	44. Assessment Task 2: Perform Scanning and diagnosis with OBD-II 45. Assessment Task 3: Perform brake system service as per vehicle's manual						
	And complete:						
	46. Knowledge assessment test (Written or Oral) 47. Portfolios at the time of assessment (if any)						
	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						
Minimum	Performance Criteria 3: Perform disassembly of timing cover, tensioner bearing and timing belt as per workshop manual						
Evidence Required	Performance Criteria 4: Perform disassembly of components and accessories related to cylinder head assembly as per vehicle's manual						
	Performance Criteria 5: Perform replacement of head gasket as per procedure						
	Performance Criteria 6: Perform assembly of cylinder head components and adjust tappet clearance as per vehicle's manual						
	Performance Criteria 7: Perform assembly of parts related to cylinder head assembly to complete the task as per vehicle's manual						
	Performance Criteria 8: Ensure housekeeping after completion of task						

Assessment Task 2

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

Assessment Task 3

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: Dismantle the disc pads, brake shoes, brake master cylinder and wheel cylinder of the brake system

Performance Criteria 4: Replace/Rebuild disc pads, brake shoes, master cylinder and wheel seals / washer of the brake system

Performance Criteria 5: Perform air bleeding/removing of the brake system

Performance Criteria 6: Adjust the parking/hand brake system

Performance Criteria 7: 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.

Candidate Details	Name: Candidate Signature:	9
Assessment Outcome	COMPETENT Name of the Assessor: Signature of the Assessor:	NOT YET COMPETENT . Assessor's code:

Assessment Summary (to be filled by the assessor)									
Activity	Method					Result			
Nature of Activity	Written Oral Observation Portfolio			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 ☐ Not Yet Com		Not Yet Compe	tent 🗖			

Each Assessment Task (with performance criteria)					
		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 ☐ Not Yet Compe			tent 🗆		

Each A	Assessment Task (with performance crit	eria)			
·			assessment task 3 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				
Compe	etent 🗆	Not Yet Compe	tent 🗆		
Portfolio (if any) Description of			oortfolio)	
Current ☐ Sufficient ☐ Authentic ☐ Valid					Reliable 🗆
Portfolio meet the following performance standards:			Yes	No	Remarks
1	Performance criteria 1				
2	Performance criteria 2				
3	Performance criteria 3]
4					
Competent ☐ Not Yet Compe			etent 🗆]	

National Vocational and Technical Training Commission (NAVTTC)

- Plot 38. Kirthar Road, Sector H-9/4, Islamabad, Pakistan
- +92 51 9044 322
- info@navttc.org
- www.navttc.org