

## Competitor Instructions – Automobile Technology

Competitor Name	Competitor No	Task
.....	.....	<b>E</b>

### Competitor Instructions

<b>Task</b>	<b>Engine Mechanical</b>
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<b>Familiarization Time</b>	5 minutes
<b>Task Duration</b>	55 minutes
<b>Total Time</b>	<b>60 minutes</b>

### Marking Summary

Section		Possible Mark
1.	Preparation	70
2.	Dismantling Timing Belt	60
3.	Dismantling Cylinder Head	50
4.	Dismantling Piston and Connecting Rod	50
5.	Cylinder Bore and Piston Measurement	150
6.	Assembling Piston and Connecting Rod	90
7.	Assembling Cylinder Head	80
8.	Assembling Timing Belt Cover and Oil pan	90
<b>Task Total</b>		<b>640</b>

## **You are required to**

- Observe occupational health & safety standards
- Only ask necessary questions
- Not speak to the public while competing
- Comply with Experts instructions
- Ensure Competitor Number on all forms
- Use appropriate tools and procedures -Complete all instructions on the next page

Remarks : Toyota Kijang 5K

Competitor Name	Competitor No	Task
.....	.....	E

1.	Perform diagnostic work according to the fault and fill in the report sheet
2.	Prepare all necessity tools and equipment for measuring engine components.
3.	Perform measurement work according to the report sheet and justify the result.

**Form 5 – Automobile Technology**

<b>Competitor Name</b>	<b>Competitor No</b>	<b>Task</b>
.....	.....	<b>E</b>

**Marking Summary**

<b>Section</b>		<b>Possible Mark</b>	<b>Actual Mark</b>
1.	Preparation	70	
2.	Dismantling Timing Belt	60	
3.	Dismantling Cylinder Head	50	
4.	Dismantling Piston and Connecting Rod	50	
5.	Cylinder Bore and Piston Measurement	150	
6.	Assembling Piston and Connecting Rod	90	
7.	Assembling Cylinder Head	80	
8.	Assembling Timing Belt Cover and Oil pan	90	
<b>Task Total</b>		<b>640</b>	

**Time Keeping**

		Competition		Breaks			
Start		Start		Start			
Stop		Stop		Stop			

1	2
.....	.....

Competitor Name	Competitor No	Task	Marking Scale
.....	.....	<b>E</b>	<b>Engine Mechanical</b>

1.	Preparation	Max	Actual	Comments
1.1	Use workshop manual	5		
1.2	Check all equipments	10		
1.3	Check all instructions	10		
1.4	Select the correct tools	10		
1.5	Calibrate measuring tools	10		
1.6	Use logical working procedure	5		
1.7	Clean up the working area	10		
1.8	Clean up tools and equipment	10		
<b>Sub-Total</b>		<b>70</b>		

2.	Preparation	Max	Actual	Comments
2.1	Remove Timing Belt Cover	10		
2.2	Remove crankshaft bolts	10		
2.3	Remove pulley	10		
2.3	Remove timing Belt tensioner	10		
2.4	Remove timing Belt	10		
2.5	Remove Oil Pan	10		
<b>Sub-Total</b>		<b>60</b>		

3.	Dismantling cylinder head	Max	Actual	Comments
3.1	Remove rocker cover	5		
3.2	Remove rocker arm & shaft	5		
3.3	Remove cylinder head bolts in correct order	25		
3.4	Remove & kip cylinder head	10		
3.5	Remove cylinder head gasket	5		

<b>Sub-Total</b>	<b>50</b>		
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Competitor Name	Competitor No	Task	Marking Scale
.....	.....	<b>E</b>	<b>Engine Mechanical</b>

4.	Dismantling piston and connecting rod	Max	Actual	Comments
4.1	Remove connecting rod cap	15		
4.2	Remove piston	20		
4.3	Remove main bearing cap	15		
<b>Sub-Total</b>		<b>50</b>		

5.	Cylinder Bore & Piston Measurement	Max	Actual	Comments
5.1	Measure Outer Diameter Piston No. 1	20		
5.2	Measure Inner Diameter Cylinder No. 1	50		
5.3	Measure piston Oil Clearance Cylinder No. 1	20		
5.4	Roundness cylinder No-1	10		
5.5	Cylindricity no 1	10		
5.6	Measure Piston ring side Clearance No. 1 & 2	20		
5.7	Measure Piston end gap clearance No.1 & 2	20		
<b>Sub-Total</b>		<b>150</b>		

Competitor Name	Competitor No	Task	Marking Scale
.....	.....	E	Engine Mechanical

6.	Assembling piston & connecting rod	Max	Actual	Comments
6.1	Assemble piston ring in correct setting	30		
6.2	Assemble piston to cylinder block	30		
6.3	Assemble connecting rod & cap	20		
6.4	Lubricate components before assembling	10		
<b>Sub-Total</b>		<b>90</b>		

7.	Assembling cylinder head	Max	Actual	Comments
7.1	Assemble cylinder head gasket	20		
7.2	Lubricate cylinder head bolt	10		
7.3	Install Cylinder Head	10		
7.3	Tighten cylinder head bolts in correct order	30		
<b>Sub-Total</b>		<b>80</b>		

8.	Assembling timing Belt	Max	Actual	Comments
8.1	Assemble crank shaft timing gear	10		
8.2	Assemble cam shaft timing gear & timing Belt	25		
8.3	Install cam shaft timing gear bolt	10		
8.4	Install timing Belt tensioner	10		
8.5	Install timing Belt cover	10		
8.6	Assemble oil pan and gasket	15		
8.7	Install crankshaft pulley and bolt	10		
<b>Sub-Total</b>		<b>90</b>		

## Competitor Report Sheet – Automobile Technology

Competitor Name	Competitor No	Task
.....	.....	<b>E</b>

### Report Sheet

#### ENGINE MECHANICAL

##### a) Piston

Description	Specification	Actual	Serviceable	Unserviceable
No. 1 Piston Outer Diameter				

##### b) Cylinder bore

Description	Specification	Actual	Serviceable	Unserviceable
No. 1 Cylinder inner diameter		A1: B1: C1:		
		A2: B2: C2:		
Roundness Cylinder No. 1				
Cylindricity No. 1				

##### c) Piston ring

Description	Specification	Actual	Serviceable	Unserviceable
Piston 1 Side clearance (No. 1 compression ring)				
Piston 1 Side clearance (No. 2 compression ring)				
Piston 1 End Gap (No. 1 compression ring)				
Piston 1 End Gap (No. 2 compression ring)				

