

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

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List of documents submitted in support of the Qualifications File

1. Curriculum and training contents for Joint Basic Phase Training (JBPT) (Annexure-I)
2. Curriculum and training contents for Trade Phase Term – I Training as (Annexure-II)
3. Curriculum and training contents for Trade Phase Term – II Training (Annexure-III)
4. Curriculum and training contents for Trade Phase Term – III Training (Annexure-IV)
5. Curriculum and training contents for Trade Phase Term – IV Training (Annexure-V)
6. Air Force Order (AFO) 57/15 specifying the role of Mechanical System Fitter (Mechanical) (Annexure-VI)
7. Blue Print of REB(T) (Annexure-VII)

SUMMARY

1. Qualification Title	AC/LAC: Mechanical System Fitter
2. Qualification Code	IAF/Mech/150
3. NCO Code and Occupation	7412.0202, Mechanical Fitter;;7233.0101, Maintenance Fitter, Mechanical Services; 5414.0111, Security Supervisor; 5411.9900, Fire fighter others
4. Nature and purpose of the qualification	A trade and rank certificate to the personnel with adequate knowledge and skill to perform the duties of Aircraftsman/Leading Aircraftsman in the Plant Maintenance Section.
5. Body/bodies which will award the qualification	Workshop Training Institute (WTI) & Regional Examining Board (Training) [REB(T)]
6. Body which will accredit providers to offer courses leading to the qualification	Directorate of Training (D Trg), Air HQ
7. Whether accreditation/affiliation norms are already in place or not (if yes, attach a copy)	N/A as specific to Defence Forces
8. Occupation(s) to which the qualification gives access	Aircraftsman/ Leading Air Craftsman of Mechanical System Fitter
9. Job Description of the Occupation	Should be able to recognise the troubleshooting problems, carry on repair works on engine system, carburettor, gearbox, brake and wheel, ignition system, electrical system. 1 st &II nd line servicing and maintenance of all ground equipment. Knowledge of repair tasks, servicing pertaining to missile frames, engine propellants & warheads. Details placed at Annexure- VI
10. Licensing requirements	N/A
11. Statutory and regulatory requirements of the relevant sector (documentary evidence to be provided)	Air Force Act, Air Force Regulations, Air Force Order,
12. Level of the qualification in the NSQF	4
13. Anticipated volume of training/learning required to	4140 Hrs comprising of: (a) 1050 Hrs of JBPT

<p>complete the qualification</p>	<p>(b) 2640 Hrs comprising of following three terms: (i) TPT Term –I : 660 Hrs (ii) TPT Term –II : 660 Hrs (iii) TPT Term –III : 660 Hrs (iv) TPT Term-IV : 660 Hrs (c) On Job Training (OJT) of 450 Hrs at Field Unit</p>
<p>14. Indicative list of training tools required to deliver this qualification</p>	<p>Classroom with modern AV aids, Computer Based Training Module, Operations and Functions of Aircraft Specialist Vehicles and Ground Support Equipment, computing appliances. Fire Arms, Range, Ground training.</p>
<p>15.Entry requirements and/or recommendations</p>	<p>Education Qualification: Passed Intermediate / 10+2 / equivalent examination in science stream / subjects approved by Central / State Education Boards with minimum 60% marks in aggregate and 50% marks in English. OR Passed two year vocational course affiliated / recognized by CBSE / State Education Boards/ Councils duly recognized at par with 10+2 by AIU with minimum 60% marks in aggregate, and 50% marks in English in Vocational Course or in Intermediate / Matriculation if English is not a subject in Vocational Course. Age : 17 Yrs -21 Yrs Prerequisite for TPT: Tradesmen should have successfully completed Joint Basic Phase Training</p>
<p>16.Progression from the qualification</p>	<p>Job Progression AC→LAC→Cpl*→Sgt*→JWO*→WO→MWO *Subject to clearing promotion exam for Corporal (Cpl), Sergeant (Sgt) and Junior Warrant Officer (JWO) called as Corporal Promotion Exam (CPE), Sergeant Promotion Exam (SPE) and Junior Warrant Officer Promotion Exam (JPE)</p>
<p>17.Planned arrangements for the Recognition of Prior learning (RPL)</p>	<p><u>N/A</u></p>
<p>18.International comparability where known</p>	<p>Not Known</p>
<p>19.Date of planned review of the qualification.</p>	<p>Every 5 yrs/earlier in case of change in training syllabus/pattern.</p>

20. Formal structure of the qualification			
Title of component and identification code.	Mandatory/ Optional	Estimated size (learning hours)	Level
1. Knowledge of repair, servicing pertaining to missile frame, engine, propellants (both solid and liquid) and warheads. IAF/Mech/150/01	M	400	4
2. Knowledge of maintenance of air compressors. IAF/Mech/150/02	M	300	4
3. Knowledge of first and second line servicing and maintenance of all aircraft ground equipment and their sub-assemblies. IAF/Mech/150/03	M	500	4
4. Knowledge of diagnosis and rectification, common manning faults such as Airlocks, Bleeding, vibration over speeding etc, reassembling hydraulic and pneumatic components such as compressors, jacks and pumps etc. IAF/Mech/150/04	M	400	4
5. Knowledge of storage servicing and maintenance of all ground equipment. IAF/Mech/150/05	M	400	4
6. Knowledge regarding amendment of publication, servicing schedules and TSIs. IAF/Mech/150/06	M	340	4
7. Knowledge of operation of refueling/defueling of aircraft (Helicopter, Fighter, Transport and Bomber), and its documentation and maintain refueller tank free from contamination. IAF/Mech/150/07	M	500	4
8. Knowledge of first and second line servicing and maintenance of mounted equipment of Mechanical Transport (MT), its prime mover and related accessories such as refuellers, UPEGA, compressors, Sudan pumps, AKASA and air charges etc). IAF/Mech/150/08	M	500	4

9. Knowledge of Engineering drawing. IAF/Mech/150/09	M	400	4
10. Knowledge of quality control of Fuel, Oil and Lubricants IAF/Mech/150/10	M	400	4
Total		4140	

NSQC Approved

SECTION 1

ASSESSMENT

21. Body/Bodies which will carry out assessment:

There are two bodies, which carry out the assessment:

1. Trade Phase Training (TPT) is completed through three/four terms respectively for Non Tech/Tech tradesmen. The formative and Summative Assessment during and at the end of the training is carried out by Unit Examining Board (UEB) of WTI respectively.
2. Regional Exam Board (Training) [REB (T)] is responsible for conducting the End Term Exam for gauging the knowledge acquired by the Personnel. The final certification and mustering into the trained trade is done by REB(T).

22. How will RPL assessment be managed and who will carry it out?

N/A,

23. Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

Assessment is carried out by both UEB and independent REB (TRG). Both the boards have all necessary infrastructure and pool of qualified Instructors, Examiners and Assessors to carry out detailed assessments. REB (T) uses all the modern trends like Online Testing and Evaluation System (OTES) for conducting the exams, evaluation and in depth analysis of the result. The exams are conducted in the following manner

1. Written Exams are conducted by both boards for the theory part of curriculum consisting of questions divided into three categories (factual, comprehension, application) for testing the knowledge of Personnel in their trade:

- (a) Objective: Multiple Choice Question, True & False, Fill in the blanks
- (b) Subjective : Very Short Answer, Short Answer, Long Answer

2. Practical Exam to test the :

- (a) Professional Skill
- (b) Core Skill of the Personnel

3. Viva Voce to gauge the overall knowledge, and its application in resolving an issue.

Blue Print for conduct of Exam is attached as Annexure - VII.

ASSESSMENT EVIDENCE

Complete a grid for each component as listed in “Formal structure of the qualification” in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – ie Learning Outcomes to be assessed, assessment criteria and the means of assessment.

24. Assessment Evidences

Title of Component

Outcomes to be assessed	Assessment criteria for the outcome
<p>1. Knowledge of repair, servicing pertaining to missile frame, engine, propellants (both solid and liquid) and warheads.</p>	<p>To be able to understand the mechanics of flight applicable to</p> <ul style="list-style-type: none"> (a) Missile including its aero dynamics. (b) Construction of missile, airframe and engine. (c) Characteristics of high speed flying and stresses on airframe structure. (d) Composition of missile propellants. (e) Construction of various types of warheads and its maintenance. (f) Safety precautions in handling explosives. (g) Explosive regulations and safety distance. regulation for transportation by rail, road and air. (h) Explosive characteristics, its categories and classifications including pyrotechnics, armament electrics. (i) Storage and preservation of explosives, periodical testing of explosives.
<p>2. Knowledge of maintenance of air compressors.</p>	<p>To be able to understand</p> <ul style="list-style-type: none"> (a) Theory and type of compressor. (b) Broad aspect of compressor construction and maintenance. (c) Types and construction of air reservoirs. (d) Principles of humidity measurements.
<p>3. Knowledge of first and second line servicing and maintenance of all aircraft ground equipment and their sub-assemblies.</p>	<p>To be able to understand the</p> <ul style="list-style-type: none"> (a) Construction and principles of operation of all types of aircraft ground equipment. (b) Safety precautions. (c) Care use and maintenance of tools, simple marking out, drilling and screw cutting by tapes and dies, various locking devices, identification and properties of materials, detection and prevention of corrosion.
<p>4. Knowledge of diagnosis and rectification, common manning faults such as Airlocks, Bleeding, vibration over speeding etc, reassembling</p>	<p>To be able to understand the</p> <ul style="list-style-type: none"> (a) Causes of common running faults of equipment and methods of rectification/ adjustments. (b) Behavior of fields under pressure and lay out of

hydraulic and pneumatic components such as compressors, jacks and pumps etc.	system, construction operation and adjustment of components of hydraulic/pneumatic system.
5. Knowledge of storage servicing and maintenance of all ground equipment.	To be able to understand the (a) Classification of ground equipment. (b) Purpose of ground equipment and its applicability. (c) Methods of storage servicing. (d) Lifting policy of storage. (e) Inhibition and de-inhibition procedures.
6. Knowledge regarding amendment of publication, servicing schedules and TSIs.	To be able to understand the (a) Amendment procedures of publication. (b) Supply of publications. (c) Servicing schedules (d) Utilisation and implementation of technical staff Instructions (TSIs).
7. Knowledge of operation of refueling/defueling of aircraft (Helicopter, Fighter, Transport and Bomber), and its documentation and maintain refueller tank free from contamination.	To be able to understand the (a) Procedure for refueling and defueling of aircraft. (b) Types of refueling nozzles, recording of fuel consumption daily and monthly/ quarterly in challan form. (c) Storing of oil/fuel book IAF (Q) 416 and store man's petrol issue books IAFF (Q) 419. (d) Types of material used for storing aircraft fuel and costing their care and maintenance.
8. Knowledge of first and second line servicing and maintenance of mounted equipment of Mechanical Transport (MT), its prime mover and related accessories such as refuellers, UPEGA, compressors, Sudan pumps, AKASA and air charges etc).	To be able to understand the (a) Procedure of carrying out servicing and method of recording in relevant documents. (b) Operation of mounted equipment. (c) Main functions of major components and its technology. (d) Concept of two stroke and four stroke CI and SI engines. (e) Safety precautions.
9. Knowledge of Engineering drawing.	To be able to understand the reading and interpretation of engineering drawing.
10. Knowledge of quality control of Fuel, Oil and Lubricants	To be able to understand the bases of FOL, FOL quality control and maintenance of Bulk Petroleum Installation.

Means of assessment 1

There are two types of Assessments viz. Formative and Summative.

- (a) The Formative Assessment is carried out continuously during the conduct of course

Exam & is conducted by UEB.

(b) Summative Assessment is carried out at the end of the course. **Exam is conducted by REB (T)**

Details are mentioned under 'Means of Assessment-2'. Written test, Practical examination/ Skill test & Viva voce.

Means of assessment 2

1. Means of Formative Assessment (Total marks allotted- 250) conducted by UEB

- | | |
|---|-----------|
| (a) Assignments for each module of Theory component | 100 Marks |
| (b) Assignments for each module of Trade Skills component | 25 Marks |
| (c) Job practical | 75 Marks |
| (d) Viva-voce | 50 marks |

2. Means of Summative Assessment (Total marks allotted- 250) conducted by REB (T)

- | | |
|---|----------|
| (a) Written test for Theory component | 100Marks |
| (b) Written test for Trade Skills component | 25 Marks |
| (c) Job practical | 75 Marks |
| (d) Viva voce | 50 Marks |

Component wise distribution of marks is given in the Annexure-II.

Pass/Fail

The minimum qualifying standard is 50% marks in each part and 50% in aggregate of all parts of Course End Knowledge Test (CEKT) Exam conducted by REB (T). Those who score 70% in each part, are directly conferred the rank of LAC.

Should pass within two attempts

SECTION 2

25.EVIDENCE OF LEVEL

OPTION A

Title/Name of qualification/component: Aircraftsman / Leading Aircraftsman of Mechanical System Fitter			Level: 4
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	Air Warriors are competent to carry out routine servicing and basic repair work of all type of ground equipment and Aircraft Specialist Vehicles (ASVs).	1. Air Warriors are capable to identify simple troubleshooting problems related to different parts of all type of ground equipment and ASVs. 2. Recognize their cause and carry out routine servicing and simple repair on the ground equipment and ASVs.	4
Professional knowledge	1. Air Warriors are competent to identify different parts of common type ground equipment & Aircraft specialist vehicles like: Ground Power Unit (GPU), Hydraulic Servicing Trolley (HST-120D, 250D and Universal, Service Air Trolley (SAT)-300 & 650 Mobile Air Charging Vehicles (MACV), KG5H air compressors, Nitrogen Making Plant, Unified Gas Station for Oxygen (UGSO ₂) and demonstrate their use 2. Air Warriors are competent to define working principle of four stroke and two stroke engine 3. Air Warriors are competent to identify hand tools, measuring tools along with their use 4. Air Warriors are competent to understand basic troubleshooting problems and their causes regarding	1. Air Warriors are able to acquire basic knowledge on different parts of ground equipment & Aircraft Specialist Vehicles and their use 2. They are also capable to acquire the working principle of four and two stroke engine 3. They are capable to identify different hand tools, measuring tools and their application. The Air Warriors are able to understand basic troubleshooting problems and their causes	4

Title/Name of qualification/component: Aircraftsman / Leading Aircraftsman of Mechanical System Fitter			Level: 4
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	various parts of Ground equipment and Aircraft Specialist Vehicles		
Professional skill	Air Warriors are competent to recognise the troubleshooting problems, carry on repair works on engine system, carburettor, gearbox, brake and wheel, ignition system, electrical system	<ol style="list-style-type: none"> 1. Air Warriors are able to identify troubleshooting problems and corresponding cause for various parts of vehicles. 2. Air Warriors are capable to service and repair different parts of Aircraft Specialist Vehicles with their practical skill. 	4
Core skill	<ol style="list-style-type: none"> 1. Air Warriors are competent to communicate within Air Force and outside agencies 2. Air Warriors are able to read the instruction manuals, job card in English 3. Air Warriors are competent to have basic computer knowledge 	Air Warriors have effective communication skill, arithmetic skills, computer skill and basic understanding of social and natural environment	4
Responsibility	Able to carry out the day to day activities related to his trade with ease.	Capable of working independently and is responsible for his work.	4

SECTION 3

EVIDENCE OF NEED

26. What evidence is there that the qualification is needed?

1. Acquisition of modern Aircraft ground equipment and Missiles in IAF inventory poses herculean task to upkeep these equipment which are meant to be used during peace, natural calamity and actual combat. These equipment need regular maintenance and servicing to keep them combat worthy round the clock.

2. The Mechanical System Fitter are entrusted upon maintaining the upkeep of these equipment. These tradesmen go through rigorous training at Training Institute and acquire the required acumen.

3. The huge number of these Aircraft ground equipment and missile acquired by IAF from India and Abroad calls for a huge pool of trained technicians at various levels. Thus this is relevant to fulfil the demand of IAF.

What is the estimated uptake of this qualification and what is the basis of this estimate?

Is based on the cadre and actual figures cannot be revealed

27. Recommendation from concerned Line Ministry of Govt/Regulatory Body. To be supported by documentary Evidences

The trade has been cleared by MoD and notification to the same effect is confidential in nature.

28. What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?

This qualification is especially tailor made to suit the specific organisational requirements of IAF. In some parts it does have some similarity with civil agency as regards to some portion of the syllabus for which the NOS have been equated.

29. What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?

IAF has well defined Directorates responsible for monitoring both the training and testing aspects. **Directorate of Training** is responsible for ensuring that right training is imparted to the recruits. The syllabus is based on various studies and feedback received from field units/REB(T).

Directorate of Education is responsible for Trade Testing and evaluation of the knowledge and skill level of the personnel passing out from the training institute and their performance in field units.

This qualification will be reviewed and revised at an interval of five years or earlier, in case of change in syllabus based on the feedback from field Units/REB (T/Z).

SECTION 4

EVIDENCE OF PROGRESSION

30. What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

On completion of the course, an Aircraftsman will be posted to Technical Type Training School (TETTRA) school, where he will undergo training on one of the specific system related to ground equipment or aircraft and after successful completion he will be detailed to work in one of the section of the Air Force unit after suitable OJT is imparted to him. With another five months of skill training under supervision he will be promoted to LAC. After three months of skill refinement he will be in a position to appear for Corporal Promotion Examination (CPE). On successful completion of CPE he will be promoted to Cpl after five years from date of enrolment. He will further keep climbing the promotion ladder by appearing for Sergeant Promotion Examination (SPE) for Sgt and Junior Promotion Examination (JPE) for JWO ranks. As per new policy in vogue, ACRs have been linked to skill levels. So, he will be motivated to enhance his skill levels and get them tested by appearing for SGT .

The progression flow is given below.

AC→LAC→Cpl*→Sgt*→JWO*→WO→MWO

*Subject to clearing promotion exam for Cpl, Sgt and JWO called as CPE, SPE and JPE

31. INSTRUCTOR PREREQUISITES: For posting as an instructor following prerequisites are to be fulfilled:-

(a) **Personal attributes:-**

- (i) Should be energetic, motivating, innovative and good at communication.
- (ii) Should be able to establish rapport with the trainees and employ innovative methods to impart instructions.

(b) **Qualification:-**

- (i) Should have attained rank of Sgt and above (at least 13 yrs of service).
- (ii) Should have been assessed 'Superior' and above during preceeding 5 yrs.

(c) **QRs:-**

- (i) Should have in depth knowledge and be highly skilled in his trade.
- (ii) Should be recommended for instructional duties by GEB/REB on attaining stipulated standards during assessment.
- (iii) Should have undergone Methods of Instruction Course conducted by Ground Training Instructors School.

Curriculum and training contents
for Joint Basic Phase Training (JBPT)

SCHEDULE OF TRAINING - JBPTC

Sl No.	Syllabus Index	Subject	Total Periods
TRAINING ACTIVITIES DURING WORKING HOURS: SIX DAYS PER WEEK EXCEPT SECOND SATURDAYS			
1.	JBPTC / GST / 1 to 12	General Service Training (including Field Craft Training camp)	590
2.	JBPTC / Eng / 1 to 4	English	350
3.	JBPTC / GSK / 1 to 11	General Service Knowledge	165
4.	JBPTC / Comp / 1 to 08	Basic Computer Training	50
5.	JBPTC/MAC/1 to 07	Mentoring & Counselling	45
TOTAL (SL NO 1 TO 5)		1200	
TRAINING ACTIVITIES BEYOND WORKING HOURS – 200 PERIODS			
6.	JBPTC / Hindi / 1 to 6	Hindi Training	36
7.	JBPTC / WTC / 1	Weak Trainees Classes / Night Classes	64
8.	JBPTC / GSD / 1	General Service Duties & Stn Duties	100
TOTAL (SL NO 6 to 8)		200 periods	
GRAND TOTAL (SL NO 1 TO 8)		1400 periods	
TOTAL EFFECTIVE TRAINING PERIODS		1400 periods=1400x45/60=1050 hour	

Annexure-II
Curriculum and training contents
for Term – I

CURRICULUM AND TRAINING CONTENTS FOR TERM – I TRAINING

SYLLABUS: TERM - I

SI No	Subject	Periods				Total
		T	D	P	M	
1	General Service Training (GST)	07	00	41	00	48
2	English	18	00	82	00	100
3	Computer & IW Fundamentals	13	06	11	00	30
4	Fundamentals of Flight	12	00	00	00	12
5	Basic Electronics & Electrical	22	08	00	00	30
6	Workshop Technology	50	20	59	00	129
7	Basic Engineering Drawing	14	01	03	00	18
8	Hydraulic & Pneumatic system	43	17	08	00	68
9	MT Electrical	26	08	00	00	34
10	MT Theory	27	12	14	00	53
11	Missile Technology	38	06	00	00	44
12	Ground Equipment	21	10	00	00	31
13	Instructional Visit	00	04	00	00	04
14	Specific Skill Development	00	00	25	00	25
15	Class Test	00	00	00	24	24
Total		219	78	109	24	430
Common Activities						278
Common Non Technical subjects						130
Common Technical subjects						42
Grand Total						880

Annexure-III
Curriculum and training
contents for Term – II

CURRICULUM AND TRAINING CONTENTS FOR TERM – II

SYLLABUS: TERM - II

SI No	Subject	Periods				Total
		T	D	P	M	
1	General Service Training (GST)	08	00	40	00	48
2	Computer & IW Fundamentals	23	06	08	00	37
3	IMMOLS	13	03	04	00	20
4	Aerospace Safety	33	03	00	00	36
5	Hydraulic & Pneumatic System	35	15	00	00	50
6	MT Theory	51	21	34	00	106
7	Armament Administration	18	00	00	00	18
8	Missile Technology	40	07	00	00	47
9	Fuel Oil & Lubricants	30	06	08	00	44
10	Ground Equipment	44	21	39	00	104
11	Preventive And Breakdown Maintenance	11	0	00	00	11
12	Road Safety	10	0	00	00	10
13	Instructional Visit	0	16	00	00	16
14	Specific Skill Development	0	0	29	00	29
15	Class test	0	0	00	20	20
Total		239	86	110	20	455
Common Activities						332
Common Non Technical subjects						37
Common Technical subjects						56
Grand Total						880

Annexure-IV
Curriculum and training
contents for Term – III
Training

CURRICULUM AND TRAINING CONTENTS FOR TERM – III

SYLLABUS: TERM – III

SI No	Subject	Periods				Total
		T	D	P	M	
1	General Service Training	01	04	43	00	48
2	Aerospace safety	20	03	00	05	28
3	Hydraulic & Pneumatic System	22	19	24	00	65
4	Air Conditioning & Refrigeration	25	00	00	00	25
5	MT Theory	39	25	54	00	118
6	Armament Administration	23	07	00	00	30
7	Missile Technology	40	05	00	00	45
8	Fuel Oil and Lubricants	21	04	00	00	25
9	Ground Equipment	57	24	39	00	120
10	Preventive And Breakdown Maintenance	40	07	04	00	51
11	Jet Engine Theory	13	06	00	00	19
12	Instructional Visit	00	16	00	00	16
13	Specific Skill Development	00	00	34	00	34
14	Class Test	00	00	00	24	24
Total		280	86	110	20	455
Common Activities						332
Common Non Technical subjects						37
Common Technical subjects						56
Grand Total						880

CURRICULUM AND TRAINING CONTENTS FOR TERM – IV

SYLLABUS: TERM – IV

SI No	Subject	Periods				Total
		T	D	P	M	
1	General Service Training (GST)	09	00	39	00	48
2	MT Theory	71	29	33	00	133
3	Armament Administration	30	06	0	00	36
4	Missile Technology	31	06	0	00	37
5	Fuel, Oil and Lubricants	25	23	16	00	64
6	Ground Equipment	40	25	49	00	114
7	Preventive And Breakdown Maintenance	22	05	00	00	27
8	Project	00	00	48	00	48
9	Instructional Visit	00	16	00	00	16
10	Specific Skill Development Phase	00	00	36	00	36
11	Class Test	00	00	00	20	20
Total		219	110	182	20	531
Common Activities						349
Common Non Technical subjects						00
Common Technical subjects						00
Grand Total						880

Annexure-VI

Air Force Order (AFO)
57/15 specifying the role of
Mechanical System Fitter
(Mechanical)

Description of Main Tasks	Supplementary tasks
<p>1. (a) Repair tasks, servicing pertaining to missile frame, engine, propellants (both solid and liquid) and warheads.</p> <p>(b) Maintenance of air compressors.</p>	<p>1. (a) (i) Mechanics of flight applicable to missile including its aerodynamics.</p> <p>(ii) Construction of missile, airframe and engine.</p> <p>(iii) Characteristics of high speed flying and stresses on airframe structure.</p> <p>(iv) Composition of missile propellants.</p> <p>(v) Construction of various types of warheads and its maintenance.</p> <p>(vi) Safety precautions in handling explosives.</p> <p>(vii) Explosive regulations and safety distance, regulation for transportation by rail, road and air.</p> <p>(viii) Explosive characteristics, its categories and classifications including pyrotechnics.</p> <p>(ix) Armament electrics.</p> <p>(x) Storage and preservation of explosives.</p> <p>(xi) Periodical testing of explosives.</p> <p>(b) (i) Theory and type of compressor.</p> <p>(ii) Broad aspect of compressor construction and maintenance.</p> <p>(iii) Types and construction of air reservoirs.</p> <p>(iv) Principles of humidity measurements.</p>
<p>2. (a) First and second line servicing and maintenance of all</p>	<p>2. (a) (i) Construction and principles of operation of all types of aircraft ground equipment.</p> <p>(ii) Safety precautions.</p>

<p>aircraft ground equipment and their sub-assemblies.</p> <p>(b) Diagnosis and rectification, common manning faults such as Airlocks, Bleeding, vibration over speeding etc, reassembling hydraulic and pneumatic components such as compressors, jacks and pumps etc.</p> <p>(c) Storage servicing and maintenance of all ground equipment.</p> <p>(d) Amendment of publication, servicing schedules and TSIs.</p> <p>(e) Refueling/defueling of aircraft (Helicopter, Fighter, Transport and Bomber), and its documentation.</p> <p>(f) To maintain refueller tank free from contamination.</p> <p>(g) First and second line servicing and maintenance of mounted equipment of MT, its primemover and related accessories such as refuellers, Upega compressors, sudan pumps, AKASA and air charges etc).</p> <p>(h) Engineering drawing reading/ Interpretation.</p>	<p>(iii) Care use and maintenance of tools, simple marking out, drilling and screw cutting by tapes and dies, various locking devices, identification and properties of materials, detection and prevention of corrosion.</p> <p>(b) (i) Causes of common running faults of equipment and methods of rectification/ adjustments.</p> <p>(ii) Behavior of fields under pressure and lay out of system, construction operation and adjustment of components of hydraulic/pneumatic system.</p> <p>(c) Classification of ground equipment, inhibition and de-inhibition procedures.</p> <p>(d) Amendment of publication, servicing schedules and TSIs.</p> <p>(e) Procedure for refueling and defueling. Types of refueling nozzles, recording of fuel consumption daily and monthly/ quarterly in challan form, storing of oil/fuel book IAF (Q) 416 and store man"s petrol issue books IAFF(Q) 419.</p> <p>(f) Types of material used for storing aircraft fuel. Type of costing their care and maintenance.</p> <p>(g) (i) Related publications and method of recording.</p> <p>(ii) Knowledge of four stroke engines.</p> <p>(h) Basic engineering drawing.</p>

BLUE PRINT : SCHEME OF EXAMINATION
PART-I OF WRITTEN EXAMINATION
DISTRIBUTION OF MARKS AND SYLLABUS
SECTION –A (MCKT)
MECHANICAL SYSTEM FITTER (MECHANICAL)

SI No	Subject	Total Periods (Theory +Demo)	DISTRIBUTION OF QUESTIONS											
			MCQ			THEORY								
						VSA			SA			LA		
			F	C	A	F	C	A	F	C	A	F	C	A
1	MT Theory	111(78+33)	2	3	1	1	1	1	1	1	1	--	1	1
2	Workshop technology	70(50+20)	1	2	1	1	1	--	1	1	--	--	1	--
3	Aerospace Safety	36(33+3)	1	1	--	--	1	--	1	1	--	--	--	--
4	Fuel,Oil and Lubricants	36(30+06)	1	1	--	1	--	--	--	1	--	--	--	1
5	MT Electrical	34(26+08)	1	1	--	--	--	--	--	1	--	1	--	--
6	Basic Engineering Drawing	15(14+01)	--	--	1	--	--	--	--	1	--	--	--	--
7	Basic electronics and Electricals	30(22+08)	1	1	--	--	1	--	--	--	--	1	--	--
8	Integrated materials and management online system(Immols)	16(13+03)	-	--	1	1	1	--	--	--	--	--	--	--
Total		348	7	8	4	4	5	1	3	6	1	2	2	2

Duration:03 hours

Marks:100

BLUE PRINT : SCHEME OF EXAMINATION
PART-II OF WRITTEN EXAMINATION
DISTRIBUTION OF MARKS AND SYLLABUS
SECTION-B (MCKT)

MECHANICAL SYSTEM FITTER (MECHANICAL)

Duration:03 hours

Marks:100

SI No	Subject	Total Periods (Theory +Demo)	DITRIBUTION OF QUESTIONS											
			MCQ			THEORY								
						VSA			SA			LA		
			F	C	A	F	C	A	F	C	A	F	C	A
1	Hydraulics & Pneumatics System	110(78+32)	2	3	1	1	1	1	1	2	--	--	1	1
2	Ground Equipment	96(65+31)	2	2	1	1	1	--	1	1		1	--	1
3	Road Safety	10	--	--	1	--	1	--	--	--	1	--	--	--
4	Missile Technology	91(78+13)	2	2	1	--	1	--	1	2	--	1	1	--
5	Armaments Administration	18	--	1	--	1	--	--	--	1	--	--	--	--
6	Fundamentals of Flight	12	1	--	--	--	1	--	--	--	--	--	--	--
7	Preventive & Breakdown Maintenance	11	--	1	--	1	--	--	--	--	-	--	--	--
Total		348	7	9	4	4	5	1	3	6	1	2	2	2

BLUE PRINT : SCHEME OF EXAMINATION
PART-I OF WRITTEN EXAMINATION
DISTRIBUTION OF MARKS AND SYLLABUS
SECTION –A (CEKT)
MECHANICAL SYSTEM FITTER (MECHANICAL)

Duration: 03 hours

Marks:100

SI No	Subject	Total Periods (Theory +Demo)	DISTRIBUTION OF QUESTIONS											
			MCQ			THEORY								
						VSA			SA			LA		
			F	C	A	F	C	A	F	C	A	F	C	A
1	Hydraulics & Pneumatics System	41(22+19)	1	1	1	1	--	--	--	1	--	--	1	--
2	Aerospace Safety	23(20+03)	1	--	--	1	--	--	--	1	--	--	--	--
3	Preventive & Breakdown Maintenance	74(62+12)	1	2	1	--	2	--	1	1	--	1	--	--
4	Ground Equipment	146(97+27)	3	4	1	1	2	1	1	2	1	1	1	1
5	Fuel, Oil and Lubricants	73(46+27)	1	2	1	1	1	--	1	1	--	--	--	1
Total		357	7	9	4	4	5	1	3	6	1	2	2	2

Annexure-VII

Blue Print for conduct of Exam

BLUE PRINT : SCHEME OF EXAMINATION
PART-I OF WRITTEN EXAMINATION
DISTRIBUTION OF MARKS AND SYLLABUS
SECTION –B (CEKT)
MECHANICAL SYSTEM FITTER (MECHANICAL)

Duration: 03 hours

Marks:100

SI No	Subject	Total Periods (Theory +Demo)	DISTRIBUTION OF QUESTIONS											
			MCQ			THEORY								
						VSA			SA			LA		
			F	C	A	F	C	A	F	C	A	F	C	A
1	Missile Technology	82(71+11)	2	2	1	1	1	--	1	1	--	1	1	--
2	Air-conditioning & Refrigeration System	25	--	1	--	1	-	--	--	1	--	--	--	--
3	Armament Administration	66(53+13)	1	2	1	1	1	--	1	1	--	--	--	1
4	MT Theory	164(110+54)	3	4	2	1	3	1	1	2	1	1	1	1
5	Jet Theory	19(13+06)	1	--	--	--	-	--	-	1	--	--	--	--
Total		358	7	9	4	4	5	1	3	6	1	2	2	2