

પોલીસ સબ ઇન્સ્પેક્ટર (મોટર ટ્રાન્સપોર્ટ) વર્ગ-3 સંવર્ગની સ્પર્ધાત્મક પરીક્ષાનો વિગતવાર અભ્યાસક્રમ

Scheme of examination

Total Marks – (210) Duration – (3 Hours) Total MCQs-(210)

The Written Examination shall consist of Part A and Part B as follows:

PART-A :

1. 90 Mark; 90 MCQs;
2. 40 % minimum qualifying standard
3. Negative marking 0.25
4. 0 (Zero) marks for “E” option

ક્રમ	વિષય	ગુણ
1	તાર્કિક કસોટી (Reasoning), Data Interpretation	30
2	ગાણિતિક કસોટી (Quantitative Aptitude)	30
3	બંધારણ, વર્તમાન પ્રવાહો, અંગ્રેજી અને ગુજરાતી કોમ્પ્રિહેન્શન (Constitution of India, Current affairs, English and Gujarati Comprehension)	30
કુલ ગુણ		90

PART-B :

1. 120 Mark; 120 MCQs;
2. 40 % minimum qualifying standard
3. Negative marking 0.25
4. 0 (Zero) marks for “E” option

Sr.No.	Subject	Marks
1	Engineering Drawing: Engineering curves, projection of points, lines & planes, orthographic and isometric projections.	100
2	Engineering Mechanics: Free-body diagrams and equilibrium; friction and its applications including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations; Lagrange’s equation.	
3	Mechanics of Materials: Stress and strain, elastic constants, Poisson’s ratio; Mohr’s circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; concept of shear center; deflection of beams; torsion of circular shafts; Euler’s theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.	

4	Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope.
5	Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds of shafts.
6	Machine Design: Principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs
7	Fluid Mechanics: Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings; basics of compressible fluid flow.
8	Heat-Transfer: Modes of heat transfer, basics of conduction, convection and radiation. Heat exchanger, two-phase heat transfer.
9	Thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.
10	Applications: Power Engineering: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. I.C. Engines: Air-standard Otto, Diesel and dual cycles. Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes.
11	Materials and Manufacturing: Structure and properties of engineering materials, heat treatment, casting, forming and joining processes, conventional manufacturing processes.
12	Metrology and Inspection: Limits, fits and tolerances; linear and angular measurements; tolerance analysis in manufacturing and assembly.
13	Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; additive manufacturing.
14	Production Planning and Control: Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing.
15	Internal Combustion Engine: I C engines – part and their functions, I C engines – types and classification, types of fuels used in I C engines and their properties. Working of petrol and diesel engines, fuel injection systems – for petrol, diesel, LPG and CNG, MPFI, cooling & lubricating system of IC engine, combustion process, performance test on IC engine, eco-friendly fuels-conventional, LPG, CNG, bio fuel
16	Automobile Engineering : Anatomy of vehicles, automobile systems - necessity of clutch, types of clutch, constructional and functional details of clutch, necessity of transmission, types of

	transmission system, brake and suspension systems, control systems, conventional steering and power steering, electrical systems- for starting, ignition and lighting, repairs and maintenance of automobiles.	
17	Pollution and Vehicle Insurance: Exhaust gasses emission control systems. CNG conversion, vehicle noise and its control. National and international standard norms for exhaust gas pollution control. PUC certification. Licensing, regulations of motor vehicles, motor vehicle insurance	
18	Diagnosis and Testing of Vehicle: Testing and diagnosis of various elements of the automobile engine, transmission, electrical and electronic system, performance test.	
19	Electric And Hybrid Vehicle: Electric vehicles, hybrid vehicles, electric propulsion system, energy storage devices, fuel cell and solar powered vehicles.	
20	AI & ML in Automotive Industry: Role, predictive vehicle technology and future of automobiles (Self Driving Technology), cruise control for the driverless cars, collision avoidance technology (CA System)	
Note: Above syllabus includes current trends and recent advancements in the relevant field		
Acts/Rules/Guidelines/Institute/Judgments		
21	The Motor Vehicle Act 1988 (with amendments)	20
22	The Central Motor Vehicles Rules, 1989 (CMVR) Chapter I : Preliminary, Chapter II : Licensing of Driving of Motor Vehicles, Chapter III : Registration of Motor Vehicle, Chapter IV : Control of Transport Vehicles, Chapter Chapter V : Construction Equipment & Maintenance of Motor Vehicle	
23	THE GUJARAT MOTOR VEHICLES RULES, 1989 Chapter I : Preliminary Chapter II : Licensing of Drivers of Motor Vehicles Chapter III : Licensing of Conductors of Stage Carriages Chapter IV : Registration of Motor Vehicles Chapter V : Control of Transport Vehicles Chapter VII : Construction Equipment & Maintenance of Motor Vehicle	
24	Gujarat Road Safety Policy 2016-17	
25	Motor Vehicle (Driving) Regulations, 2017	
26	Gujarat Road Safety Authority Act 2018	
27	Supreme Court Committee on Road Safety guidelines	
Note: Above syllabus includes latest amendments		
Total Marks of Part-B (100+20)		120