This Question Paper consists of **21** questions and **7** printed pages.
इस प्रश्न-पत्र में **21** प्रश्न तथा **7** मुद्रित पृष्ठ हैं ।

Roll No.
अनुक्रमांक

Code No. **64/VOC/O**
कोड नं.

Set - A

FOUR-WHEELER ENGINE MECHANISM
(624/724)

Day and Date of Examination _____
(परीक्षा का दिन व दिनांक)

Signature of Invigilators 1. _____
(निरीक्षकों के हस्ताक्षर)

2. _____

General Instructions :

1. Candidate must write his/her Roll Number on the first page of the Question Paper.

2. Please check the Question Paper to verify that the total pages and total number of questions contained in the question paper are the same as those printed on the top of the first page. Also check to see that the questions are in sequential order.

3. For the objective type of questions, you have to choose any one of the four alternatives given in the question, i.e., (A), (B), (C) or (D) and indicate your correct answer in the answer-book given to you.

4. Making any identification mark in the answer-book or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.

5. Answers for all questions, including matching, true or false, fill in the blanks, etc., are to be given in the answer-book only.

6. Write your Question Paper Code No. **64/VOC/O**, Set **A** on the answer-book.

सामान्य अनुदेश :

1. परीक्षार्थी प्रश्न-पत्र के पहले पृष्ठ पर अपना अनुक्रमांक अवश्य लिखें ।

2. कृपया प्रश्न-पत्र को जाँच लें कि प्रश्न-पत्र के कुल पृष्ठों तथा प्रश्नों की उतनी ही संख्या है जितनी प्रथम पृष्ठ के सबसे ऊपर छपी है । इस बात की जाँच भी कर लें कि प्रश्न क्रमिक रूप में हैं ।

3. वस्तुनिष्ठ प्रश्नों के लिए आपको प्रश्न के (A), (B), (C) अथवा (D) चारों विकल्पों में से कोई एक सही उत्तर चुनना है तथा अपने सही उत्तर को आपको उत्तर-पुस्तिका में लिखना है ।

4. उत्तर-पुस्तिका में पहचान-चिह्न बनाने अथवा निर्दिष्ट स्थानों के अतिरिक्त कहीं भी अनुक्रमांक लिखने पर परीक्षार्थी को अयोग्य ठहराया जाएगा ।

5. मिलान करना, सही अथवा ग़लत, रिक्त स्थान भरना आदि सहित सभी प्रश्नों के उत्तर, उत्तर-पुस्तिका में ही लिखें ।

6. अपनी उत्तर-पुस्तिका पर प्रश्न-पत्र का कोड नं. **64/VOC/O**, सेट **A** लिखें ।

FOUR-WHEELER ENGINE MECHANISM

(624/724)

*Time allowed : **3** Hours]* *[Maximum Marks : **80***

SECTION-A

*Answer any **four** questions. Give neat sketches/diagrams to clarify your answers.* *10×4=40*

1. Identify the units of the Conventional Direct injection and Common Rail Direct injection systems adopted in multi-cylinder 4-stroke cycle diesel engines. Compare them.

2. Draw a neat sketch of a 4-cylinder petrol engine crank shaft and show the details. Explain its functions.

3. Compare water cooling system with air cooling system adopted for internal combustion engines mentioning their limitations.

4. What are the pollutants coming out of the petrol engine's exhaust and what are their harmful effects ? Sketch and explain the working of a catalytic converter.

5. Discuss in detail the safety aspects to be observed in an auto garage.

SECTION-B

*Answer any **four** questions. Give neat sketches/diagrams to clarify your answers.* *5×4=20*

6. Give separate tables with sample readings of cell voltage and specific gravity of the electrolyte of a 12-volts lead acid battery in good condition.

7. Name the gauge which is used for measuring the ovalness of an engine cylinder and explain the procedure.

8. Mention five important items that should be available in a First-Aid kit and their specific purpose.

9. Explain the working of a two-stroke cycle petrol engine.

10. What are the functions of the piston rings in diesel engines ?

SECTION-C

Select the correct answers and write them in your Answer Book. *1×10=10*

11. The volume of charge displaced by the engine's piston is calculated from the parameters :

(a) Bore diameter and length of connecting rod

(b) Bore diameter and stroke length

(c) Piston diameter and length of piston

12. The turbo charger fitted in modern diesel engines is operated by :

(a) Engine's crank shaft

(b) Engine's cam shaft

(c) High speed exhaust gas

13. Most suitable firing/injection order of a 4-cylinder 4-stroke cycle I.C. engine is

(a) 1-3-4-2

(b) 1-2-3-4

(c) 1-4-3-2

14. The distributor of the petrol engine rotates at :

(a) the speed of crank shaft

(b) the same speed as the cam shaft

(c) half the speed of cam shaft

15. The electrolyte in the cells of lead-acid battery is :

(a) distilled water

(b) dilute sulphuric acid

(c) dilute potassium hydroxide

16. The extent of accuracy of a micrometer is :

(a) 0·01 mm

(b) 0·02 mm

(c) 0·05 mm

17. The gap between the spark plug electrode is measured by :

(a) depth gauge

(b) thread gauge

(c) feeler gauge

18. The resistance flow of liquid is known as :

(a) viscosity

(b) specific gravity

(c) relative density

19. The pre-combustion chambers of the indirect injection diesel engines are pre-heated by _____ before starting the engine.

(a) spark plugs

(b) flame

(c) glow plugs

20. Various hydrocarbons in the crude oil are separated according to their boiling points. This is known as

(a) fractional distillation

(b) cracking

(c) evaporation

SECTION-D

Match the items on the left-hand side with the items on the right-hand side and write them in your answer book. *1×10=10*

21.

	I		*II*
(a)	Atomizer	(1)	Working principle of spark ignition engines
(b)	Circlip	(2)	To protect the user from electrical shock
(c)	Jatropha seeds	(3)	To cut internal threads
(d)	Morse taper	(4)	Opens corroded nuts and studs
(e)	Relief valve	(5)	Unit of cooling system
(f)	Constant volume cycle	(6)	Breaks down the fuel into fine spray
(g)	Thermostat	(7)	Unit in the lubrication system
(h)	Stud remover	(8)	Provided for drill bits having taper shank
(i)	A set of 3 taps	(9)	Biodiesel
(j)	Tools having insulated handles	(10)	A locking device for piston pin