CERT-C-1025 **CPBS–11**

CERTIFICATE EXAMINATION – FEBRUARY 2025.

BS VI Emission Standard

VEHICLE EMISSION AND ITS CONSTITUENTS

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What are the primary pollutants contributed by vehicles in metropolitan cities?
2. Explain the mechanism of CO (carbon monoxide) formation in an SI engine.
3. What are the main strategies used to control NOx emissions in engines?
4. What is a catalytic converter, and how does it help in controlling emissions?
5. What is the purpose of smoke meters in testing engine emissions?

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. How does vehicle population in metropolitan cities contribute to global warming?

7. Compare the pollutants emitted by a Diesel engine with those of a Petrol engine.

8. What is a catalytic converter, and how does it help in controlling emissions?

9. Explain the purpose of the second-generation air injection system.

10. Explain how a Gas Chromatograph is used in emission measurement.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss the contribution of vehicle population in metropolitan cities to environmental pollution, human health, and global warming.

12. Compare the pollutants from diesel and petrol engines and analyze the impact of these emissions on human health and the environment.

13. Explain various design strategies and modifications used to control emissions from engines.

14. Discuss the various measurement techniques used to assess vehicle emissions, including NDIR, FID, chemiluminescent analyzers, gas chromatographs, and smoke meters.

15. Analyze the transient operational effects and the role of NVH (Noise, Vibration, and Harshness) in the overall pollution.

16. Explain the principles behind each technique and their application in emission testing, including the advantages and limitations of these methods in real-world scenarios.

17. Discuss the role of exhaust gas treatment devices, crankcase emission control, evaporative emission control, and catalytic converter systems in reducing the environmental impact of vehicle emissions.

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CERT-C-1026 **CPBS–12**

CERTIFICATE EXAMINATION – FEBRUARY 2025.

BS-VI Emission Standard

INDIAN VEHICLE EMISSION NORMS AND STANDARDS

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What is the need for emission standards?

2. What is BS-I?

3. What is the difference between BS-II and BS-III emission norms?

4. What is BS-IV emission standard?

5. Why was BS-V skipped in India?

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain the history and importance of emission norms in India.

7. Describe the BS-I emission standards and their applicability in India.

8. Explain the BS-II and BS-III emission norms in India.

9. Discuss the BS-IV emission standards in India.

10. Explain the reasons behind skipping BS-V and moving directly to BS-VI in India.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. How did emission performance standards evolve over time, and what role do they play in controlling pollution?

12. How did the implementation of BS-I help in reducing vehicle emissions?

13. What were the key differences between them, and how did each standard contribute to reducing air pollution?

14. How did the introduction of BS-IV norms contribute to reducing pollutants, and what was the timeline for their implementation?

15. Compare the BS-VI norms with BS-IV, and discuss the impact of BS-VI on the automobile industry, including changes for two-wheelers and fuel quality.

16. Illustrate the effect of BS VI Norms on the Automobile Industry.

17. What is the BS VI Norms for Fuels? List and describe.

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