



1934

Motor Car Engineering (3rd Year): Technical School Examinations 1934

Department of Education: Technical Instruction Branch

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COURSE IN MOTOR CAR ENGINEERING.

(73)

AN ROINN OIDEACHAIS.
(Department of Education.)

BRAINSE AN CHEARD-OIDEACHAIS.
(Technical Instruction Branch.)

TECHNICAL SCHOOL EXAMINATIONS.

1934.

MOTOR CAR ENGINEERING.
(Third Year.)

Monday, May 14th—7 to 10 p.m.

Examiner—RICHARD COULSON, ESQ., A.R.C.S.C.I., M.S.A.E.

Co-Examiner—J. P. HACKETT, ESQ., B.E., A.R.C.S.C.I.

GENERAL INSTRUCTIONS.

You are carefully to enter on the Answer Book and Envelope supplied your Examination Number and the subject of examination, but you are not to write your name on either. No credit will be given for any Answer Book upon which your name is written, or upon which your Examination Number is not written.

You must not have with you any book, notes, or scribbling paper.

You are not allowed to write or make any marks upon your paper of questions.

You must not, under any circumstances whatever, speak to or communicate with another candidate; and no explanation of the subject of the examination may be asked for or given.

You must remain seated until your answer-book has been taken up, and then leave the examination-room quietly. You will not be permitted to leave before the expiration of twenty minutes from the beginning of the examination, and will not be re-admitted after having once left the room.

If you break any of these rules, or use any unfair means, you are liable to be dismissed from the examination, and your examination may be cancelled by the Department.

Three hours are allowed for this paper. Answer-books, unless previously given up, will be collected at 10 p.m.

INSTRUCTIONS.

Read the General Instructions on page 1.

You are not permitted to attempt more than SIX questions.

The use of drawing instruments and slide-rules is allowed.

Write the number of the question before the answer.

1. Describe any recent developments in the direction of mounting the power unit of a car flexibly and sketch the arrangement adopted by some prominent manufacturer.

Name any precaution which must be taken in connection with the electrical system when such an arrangement is used.

[50 marks.]

2. Sketch, in section, the mechanical parts of a flywheel type engine starter and describe how engagement and disengagement of the pinion is effected.

State the probable causes of failure of the starter apart from electrical breakdown, and how you would proceed to remedy them.

[50 marks.]

3. Give the reasons why it is desirable to maintain the cooling water in the jackets of an engine at a high temperature when running.

Describe and illustrate with a sketch some type of accessory which has for its object the rapid raising of the water temperature at starting and its maintenance at a uniform heat when running.

[50 marks.]

4. State the properties which are desirable in an oil to be used for internal combustion engine lubrication and describe briefly any tests you are acquainted with for determining its suitability for such a purpose.

[50 marks.]

5. Make a sectional sketch of the Solex carburettor and describe its action.

Enumerate the adjustments that can be made to enable it to be tuned to suit individual engines, and if you consider it possesses any outstanding features, name them.

[50 marks.]

6. Describe the Syncromesh system of easy gear changing and sketch the essential parts of the gear as used by any prominent manufacturer.

[50 marks.]

7. Discuss the effect of variation in air/petrol mixture strength upon the rate of combustion in an engine cylinder and upon the composition of the exhaust gases.

Between what limits, approximately, is an air/petrol mixture combustible?

[50 marks.]

8. Assuming you have to remetal the main bearings of a four-cylinder engine fitted with a three-bearing crankshaft, describe how you would do this and bed-in the shaft.

[50 marks.]

9. Describe and illustrate with a sketch some form of equipment for dealing with vehicles which have been incapacitated owing to a collision or other accident.

Outline the procedure you would adopt when using such equipment to rescue a ditched vehicle and convey it to a garage for repairs.

[50 marks.]