The Chartered Institute of Logistics and Transport

Sample

DGSA Examination Papers

[June 2017]

- CORE
- CORE with Solutions
- ALL CLASSES
- ALL CLASSES with Solutions
- ROAD
- ROAD with Solutions

Answers to questions must be given in the space provided below each question.

In your answers, the use of the following abbreviations is permitted:

2017 ADR …….. 2017 edition of the ADR Agreement

CDGRR …….. European Communities (Carriage of Dangerous Goods by Road and Use of Transportable Pressure Equipment) Regulations 2011 to 2017

All answers **must** be in ink

If you need extra space, write ‘continued’ and finish your answer in the space provided at the end of the booklet. Make sure you mark any continuation with the question number.

Rough work, not intended to be read by the marker, should be scored out.

No part of this booklet is to be torn out. No writing is allowed on any other paper.

No unauthorised material may be brought into the examination room.

No talking or other means of communication between candidates is allowed during the examination. Any candidate found to be doing so will be subject instant dismissal from the examination room. All queries should be directed to an invigilator.

All queries should be directed to an invigilator.

You may not leave the examination during the first 30 minutes or last 15 minutes of the examination unless you are ill. In this case, let an invigilator know and they will make sure the correct procedure is followed.

You must hand your booklet to an invigilator before leaving.

Booklets must not be removed from the examination room under any circumstances.

Note: When you use a reference document to find your answer, you must include the following information – the document title and, as appropriate, the relevant paragraph numbers, sub-paragraph numbers, section, regulation, and schedule. Marks may be lost if relevant detail is omitted.

Give your answer in the space provided below each question.

Answer ALL questions

SAMPLE CORE Paper

Dangerous Goods Safety Adviser Examination Paper

50 Marks Pass Mark 65% (32.5 marks)

Answer ALL questions

Give your answer in the space provided below each question.

1. **Complete the following table:**

UN No.	Substance or Article	Class / Division	Packing Group
2048			
	Igniters	S	
2919			
	Sodium Chlorite		

(12)

2. **Murnaghan & Co manufacture fuel additives. They decide to market a new liquid formulation which has the following properties:**

   Flashpoint 39ºC Boiling Point 73ºC

   Tests show that it will destroy intact skin tissue in a contact time of 2 hours 45 minutes during an observation period of 10 days

   a) **Classify the formulation explaining your decision. State its class and subsidiary risks.**

(4)

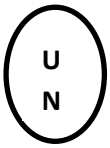
Reference(s):	

   b) **The dangerous ingredients of the formulation are substances with the technical names Theta and Rho. Choose a suitable Proper Shipping Name and UN number for the formulation. Show how the Proper Shipping Name would be written on a transport document.**

(4)

Reference(s):	

3. **A package bears the UN certification coding shown below. Explain fully the meaning of each element of the Code.**

   i. 

   ii. **3B2**
   iii. **Y1.7**
   iv. **250**
   v. **03**
   vi. **IND**
   vii. **ZZ75**

(9)

Reference(s):	

4. **A flammable liquid adhesive is to be transported from Limerick to Killarney in 50 litre drums.**

   a) **According to the appropriate regulations, who is responsible for the correct packaging of the adhesive?**

(2)

Reference(s):	

   b) **What danger marking and label(s) should appear on the drums?**

(3)

Reference(s):	

5. **Sodium hydroxide solution of Packing Group III is to be transported in consignments of 2000 litres from Dusseldorf, Germany, to Antwerp, Belgium. It is proposed to use plastic inner packaging's of 25 litres. Can the substance be transported in Large Packaging's in these inner packaging's? Explain your answer as fully as you can.**

(4)

Reference(s);	

6. **What is the maximum interval between a periodic inspection for an ADR tank swap body intended for the transport of liquids?**

(2)

Reference(s):	

7. **Sodium chlorate, to be used as a general-purpose weed killer, is to be transported to a wholesaler in inner packaging in non-certified boxes. State the maximum quantity per inner packaging and the maximum permitted gross mass of the boxes which allows this to happen.**

(3)

Reference(s):	

8. **You discover that an undertaking has failed to provide its warehouse staff, who load vehicles, with copies of their dangerous goods training records. As the DGSA for the undertaking, what would you recommend to the undertaking?**

(2)

Reference(s):	

9. How many hazard groups are there in Class 2 according to ADR?

(2)

Reference(s):	

10. A consignment of 70 x 200 litre drums of ethyl formate is to be transported in IBCs inside a large container from Rome, Italy, to Zurich, Switzerland. State the danger placards which should be displayed on the container.

(3)

Reference(s):	

[END OF QUESTION PAPER]

SAMPLE CORE Paper

Dangerous Goods Safety Adviser Examination Paper
[Solutions and Marking Scheme]
50 Marks Pass Mark 65% (32.5 marks)

Answer ALL questions

Give your answer in the space provided below each question.

1. **Complete the following table:**

UN No.	Substance or Article	Class / Division	Packing Group
2048	*Dicyclopentadiene* ***(1 mark)***	*3* ***(1 mark)***	*III* ***(1 mark)***
0454 ***(1 mark)***	**Igniters**	*1.4***S** ***(1 mark)***	*None* ***(1 mark)***
2919	*Radioactive material transported under special arrangement* ***(1 mark)***	*7* ***(1 mark)***	*None* ***(1 mark)***
1496 ***(1 mark)***	**Sodium Chlorite**	*5.1* ***(1 mark)***	*II* ***(1 mark)***

(12)

2. **Murnaghan & Co manufacture fuel additives. They decide to market a new liquid formulation which has the following properties:**
   Flashpoint 39ºC Boiling Point 73ºC

   Tests show that it will destroy intact skin tissue in a contact time of 2 hours 45 minutes during an observation period of 10 days

   a) **Classify the formulation explaining your decision. State its class and subsidiary risks.**

Solution: *The flashpoint and boiling point data would place the formulation in Class 3, packing group III.* ***(1 mark)***
The corrosivity data would place the formulation in Class 8, packing group III. ***(1 mark)***
Using the rules of precedence and the table of precedence, the Class 3 danger takes precedence. Therefore the formulation will be placed in Class 3 packing group III with a corrosive subsidiary risk. ***(1 mark)***

(4)

Reference(s):	*2017 ADR: subparagraph 2.2.3.1.3, 2.2.8.1.6(c), 2.1.3.10* ***(1 mark)***

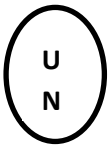
b) The dangerous ingredients of the formulation are substances with the technical names Theta and Rho. Choose a suitable Proper Shipping Name and UN number for the formulation. Show how the Proper Shipping Name would be written on a transport document.

Solution: *Flammable liquid, corrosive, n.o.s.* ***(1 mark)*** *(contains Theta and Rho)* ***(1 mark)***
UN 2924 ***(1 mark)***

(4)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (6), Chapter 3.2, special provision 274 in subparagraph 3.3.1, subparagraphs 2.2.3.3, 3.1.2.8 and 5.4.1.1.1* ***(1 mark)***

3. A package bears the UN certification coding shown below. Explain fully the meaning of each element of the Code.

i. 

The United Nations packaging symbol ***(1 mark)***

ii. **3B2** *Aluminium jerrican, removable head* ***(1 mark)***

iii. **Y1.7** *Suitable for liquids of packing groups II and III up to a relative density of 1.7* ***(2 marks)***

iv. **250** T*ested hydraulically to a test pressure of 250 kPa (2.5 bar)* ***(1 mark)***

v. **03** *Year of manufacture (2003)* ***(1 mark)***

vi. **IND** *The State authorising the mark* ***(1 mark)***

vii. **ZZ75** *The name of the manufacturer or other identification of the packaging specified by the competent authority* ***(1 mark)***

(9)

Reference(s):	*2017 ADR:subparagraphs 6.1.2 and 6.1.3* ***(1 mark)***

4. A flammable liquid adhesive is to be transported from Limerick to Killarney in 50 litre drums.

a) According to the appropriate regulations, who is responsible for the correct packaging of the adhesive?

Solution: *The consignor* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: Subparagraph 1.4.2.1.1(c)* ***(1 mark)***

b) What danger marking and label(s) should appear on the drums?

Solution: *The drums should be marked with the UN number 'UN 1133'* ***(1 mark)*** *and labelled with a number 3 flammable liquid label* ***(1 mark)***

(3)

Reference(s):	*2017 ADR: The Dangerous Goods List, Tables A and B, subparagraphs 5.2.1.1 and 5.2.2.1.1* ***(1 mark)***

5. Sodium hydroxide solution of Packing Group III is to be transported in consignments of 2000 litres from Dusseldorf, Germany, to Antwerp, Belgium. It is proposed to use plastic inner packaging's of 25 litres. Can the substance be transported in Large Packaging's in these inner packaging's? Explain your answer as fully as you can.

Solution: *Sodium hydroxide solution of packing group III is assigned UN 1824 packing group III, with packing instruction LP01* ***(1 mark)***
This allows up to 30 litre inner packaging's to be used. The Large Packaging must have a capacity of no more than 3m^3 ***(1 mark)***
Hence the answer is yes ***(1 mark)***

(4)

Reference(s);	*2017 ADR: The Dangerous List, Table A, columns (1), (2) and (8), Table B, Chapter 3.2. Packing instruction LP01, subparagraph 4.1.4.3, Chapter 4.1* ***(1 mark)***

6. What is the maximum interval between a periodic inspection for an ADR tank swap body intended for the transport of liquids?

Solution: *5 years* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: paragraph 6.8.2.4.2* ***(1 mark)***

7. Sodium chlorate, to be used as a general-purpose weed killer, is to be transported to a wholesaler in inner packaging's in non-certified boxes. State the maximum quantity per inner packaging and the maximum permitted gross mass of the boxes which allows this to happen.

Solution: *Sodium chlorate is assigned UN 1495. Limited Quantities provisions applies when a maximum of 1 kg is packed into each inner packaging and a maximum gross mass of the box of 30 kg.* ***(1 mark)***
Substances packed in accordance with the 'Limited Quantities' provisions are not required to be packed in certified boxes. ***(1 mark)***

(3)

Reference(s):	*2017 ADR: Dangerous Goods List Table A, column (7a), and Table B; subparagraphs 3.4.1 and 3.4.2 of Chapter 3.4* ***(1 mark)***

8. **You discover that an undertaking has failed to provide its warehouse staff, who load vehicles, with copies of their dangerous goods training records. As the DGSA for the undertaking, what would you recommend to the undertaking?**

Solution: *You would ask the undertaking to issue a copy of the dangerous goods training record to each employee.* ***(1 mark)***

(2)

Reference(s):	*2017ADR: Paragraph 1.3.3* ***(1 mark)***

9. **How many hazard groups are there in Class 2 according to ADR?**

Solution: *nine* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: Paragraph 2.2.2.1.3* ***(1 mark)***

10. **A consignment of 70 x 200 litre drums of ethyl formate is to be transported in IBCs inside a large container from Rome, Italy, to Zurich, Switzerland. State the danger placards which should be displayed on the container.**

Solution: *Ethyl formate is assigned UN 1190 and is a flammable liquid of Class 3* ***(1 mark)***
The container should be placarded on both sides and each end with a No. 3 flammable liquid placard. ***(1 mark)***

(3)

Reference(s):	*2017 ADR: The Dangerous Goods list, Table A, Columns (1), (2), (3a) and (5), Table B, Chapter 3.2. Paragraphs 5.3.1.2, Chapter 5.3* ***(1 mark)***

[END OF QUESTION PAPER]

SAMPLE ALL CLASSES Paper
Dangerous Goods Safety Adviser Examination Paper

50 Marks. Pass Mark 65% (32.5 marks)

Answer ALL questions

Give your answer in the space provided below each question.

1.

a) A product is a solution of diethyl ketone and ethanol in water. It has an initial boiling point of 101ºC and a flash point of 11ºC. Determine the Class, classification code and packing group of the product.

b) Choose a suitable Proper Shipping Name and UN Number for the product.

(6)

Reference(s):	

2. The Research and Development section of your company wishes to send two litres of nitric acid (65%) from Limerick to Drogheda. The consignee has indicated that they would prefer the acid in containers of less than 1 litre capacity.

a) Is it permitted to send the consignment as Limited Quantities? Fully explain your answer

b) What danger marks and labels, if any of either, must be shown on the package, taking note that the consignment will be transported on a domestic journey?

(7)

Reference(s):	

3. You have been asked to consign 5 litres of allyl chloroformate and 10 litres of aniline together in an outer packaging on an international journey. Neither substance meets the criteria to be classified as environmentally hazardous.

a) Show why this mixed packing is allowed. State the minimum number of inner packaging's that would be required.

(6)

Reference(s):	

b) State a further condition upon which the mixed packing would be allowed

(1)

c) What danger marks and labels should appear on the outer package? Give your answer as fully as you can.

(5)

Reference(s):	

4.

a) Some machinery used in the construction industry, which uses petrol as a fuel, is to be transported on road vehicles from Drogheda to Cork. The machinery cannot be totally drained of the fuel. Explain, nevertheless, why the machinery may be transported by road without needing to comply with the dangerous goods regulations.

(2)

Reference(s):	

b)

i. Some of the UN1203 petrol is to be repacked into 25 litre plastic jerricans marked UN/3H1/Z/100/15/IRL/9966. State the reason why these packagings would be unsuitable.

ii. What danger marks and/or labels, if any, should be shown on correct plastic jerricans?

(7)

Reference(s):	

5. **Your transport company is to collect a pallet of UN 1905 from a consignor in Rome, Italy, to take to Landskrona, Sweden. On the pallet are 100 boxes with inner packaging's. Each inner packaging contains 1 kg of the substance and the boxes weigh 5 kg each.**

   a) **Would the boxes have to be UN certified? Explain your answer fully.**

(4)

Reference(s):	

   b) **The boxes have been covered with a black plastic film before banding to the pallet. The mark 'UN 1905' has been placed on the plastic film. Is this sufficient marking and/or labelling to allow the order to be collected?**

(5)

Reference(s):	

6. **What is the activity concentration for exempt material for radionuclide Mn-52?**

(3)

Reference(s):	

7. **A temperature controlled self-reactive substance of Class 4.1 is to be carried from Oporto, Portugal, to Bilbao, Spain. What additional information has to be shown on the transport document?**

(2)

Reference(s):	

8. **Dangerous goods are to be transported internationally by road and air within Europe. Apart from ADR, what other international regulations would apply to this consignment?**

(2)

Reference(s):	

[END OF QUESTION PAPER]

SAMPLE ALL CLASSES Paper
Dangerous Goods Safety Adviser Examination Paper
[Solutions and Marking Scheme]
50 Marks. Pass Mark 65% (32.5 marks)

Answer ALL questions

Give your answer in the space provided below each question.

1.

a) A product is a solution of diethyl ketone and ethanol in water. It has an initial boiling point of 101ºC and a flash point of 11ºC. Determine the Class, classification code and packing group of the product.

Solution: *Flash point of 11ºC and initial boiling point of 101ºC indicates Class 3, classification code F1, packaging group II (without a subsidiary risk).*
(2 marks; 1 mark to 'F1' and 1 mark for the packing group)

b) Choose a suitable Proper Shipping Name and UN Number for the product.

Solution: *Flammable liquid, n.o.s. (diethyl ketone and ethanol solution); UN1993*
(3 marks; 1 mark for PSN to 'n.o.s.', 1 mark for details in brackets and 1 mark for UN number)

(6)

Reference(s):	*2017 ADR: Subparagraphs 2.2.3.1.3, 2.2.3.1.2 and 2.2.3.3, Chapter 2.2. The Dangerous Goods List, columns (1), (2) and (6), Chapter 3.2. SP274 in Chapter 3.3. Subparagraph 3.1.2.8.1, Chapter 3.1.* ***(1 mark)***

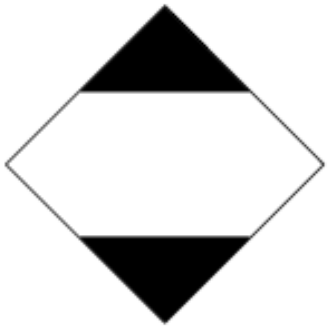
2. The Research and Development section of your company wishes to send two litres of nitric acid (65%) from Limerick to Drogheda. The consignee has indicated that they would prefer the acid in containers of less than 1 litre capacity.

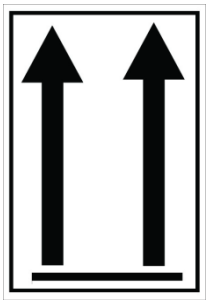
a) Is it permitted to send the consignment as Limited Quantities? Fully explain your answer

Solution: *Nitric acid (65%) is a Class 8 substance, UN 2031, packing group II. A maximum of 1 litre per inner packaging of this substance may be carried under Limited Quantities provisions.* ***(1 mark)***
This allows inner packaging's up to 1 litre in an outer packaging with a total gross mass not exceeding 30 kg. ***(1 mark)***
Therefore the acid could be sent as a limited quantities package provided a combination packaging is used. ***(1 mark)***

b) What danger marks and labels, if any of either, must be shown on the package, taking note that the consignment will be transported on a domestic journey?

Solution: *The package shall be marked with the following marks –*



and 

(1 mark)

Danger labels are not required. ***(1 mark)***

(7)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1) and (7a), and Table B, Chapter 3.2. Subparagraphs 3.4.1 and 3.4.2, Chapter 3.4.* ***(1 mark)*** *Subparagraph 3.4.7, Chapter 3.4. Subparagraph 5.2.1.9.1, Chapter 5.2.* ***(1 mark)***

3. You have been asked to consign 5 litres of allyl chloroformate and 10 litres of aniline together in an outer packaging on an international journey. Neither substance meets the criteria to be classified as environmentally hazardous.

a) Show why this mixed packing is allowed. State the minimum number of inner packaging's that would be required.

Solution: *Establish that allyl chloroformate is a substance of Class 6.1, classification code TFC, packing group I, UN 1722; to which mixed packing provisions MP8 and MP17 apply.* ***(1 mark)***

Establish that aniline is a substance of Class 6.1, classification code T1, packing group II, UN 1547; to which mixed packing provision MP15 applies. ***(1 mark)***

Establish that as both substances are in Class 6.1, mixed packing provision MP17 can be ignored.

Establish that mixed packing provision MP8 would permit the mixed packing of UN 1722 with UN 1547, provided that each inner packaging of UN 1722 does not exceed 3 litres. Therefore the 5 litres of UN 1722 would require at least two inner packaging's. ***(1 mark)***

Establish that mixed packing provision MP15 would permit the mixed packing of UN 1547 with UN 1722, provided that each inner packaging of UN 1547 also does not exceed 3 litres. Therefore the 10 litres of UN 1547 would require at least four inner packaging's. ***(1 mark)***

Therefore, the minimum total number of inner packaging's, required for mix packing the two substances, would be six. ***(1 mark)*** **(6)**

Reference(s):	*2017 ADR: The Dangerous Goods List, columns (1), (3a), (3b), (4) and (9b), Table A and Table B, Chapter 3.2. MP8, MP15 and MP17 in subparagraph 4.1.10, Chapter 4.1* ***(1 mark)***

b) State a further condition upon which the mixed packing would be allowed

Solution: *The two substances must not react dangerously with each other.* ***(1 mark)***

(1)

What danger marks and labels should appear on the outer package? Give your answer as fully as you can.

Solution: *The package should be marked with the UN numbers for both substances, i.e. UN 1547 and UN 1722, and also with the 'orientation arrows'* ***(1 mark)***
The package should be labelled with a number 6.1 toxic label, a number 3 flammable liquid label and a number 8 corrosive label. A second number 6.1 toxic label is not required. ***(2 marks)***

(5)

Reference(s):	*2017 ADR: The Dangerous Goods List, columns (1) and (5), Table A, Chapter 3.2. Subparagraphs 5.2.1.1, 5.2.1.9.1 and 5.2.2.1.1, Chapter 5.2.* ***(1 mark)*** *Subparagraph 5.1.4, Chapter 5.1.* ***(1 mark)***

4.

a) Some machinery used in the construction industry, which uses petrol as a fuel, is to be transported on road vehicles from Drogheda to Cork. The machinery cannot be totally drained of the fuel. Explain, nevertheless, why the machinery may be transported by road without needing to comply with the dangerous goods regulations.

Solution: *By a derogation in ADR, machinery in this situation is exempt from all the ADR provisions, provided measures have been taken to prevent any leakage of contents in normal conditions of carriage.* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: Subparagraph 1.1.3.1(b), Chapter 1.1* ***(1 mark)***

b)

i. Some of the UN1203 petrol is to be repacked into 25 litre plastic jerricans marked UN/3H1/Z/100/15/IRL/9966. State the reason why these packaging's would be unsuitable.

Solution: *The 'Z' in the UN certification code indicates that these packaging's are for packing group III substances only.* ***(1 mark)***
Packing instruction P001 applies to UN 1203, which allows jerricans of 3H1 (up to 60 litres capacity) to be used. However, UN 1203 is a packing group II substance, which means that the packaging should be coded 'Y' (or 'X'). ***(1 mark)***
Therefore these jerricans may not be used. ***(1 mark)***

ii. What danger marks and/or labels, if any, should be shown on correct plastic jerricans?

Solution: *They should be marked with the UN number, i.e. UN 1203.* ***(1 mark)***
They should be labelled with a No. 3 flammable liquid label. ***(1 mark)***

(7)

Reference(s):	*2017 ADR: The Dangerous Goods List, columns (1), (2), (4) and (8), Table A, Chapter 3.2. Packing instruction P001 in subparagraph 4.1.4.1, Chapter 4.1. Subparagraphs 5.2.1.1 and 5.2.2.1.1, Chapter 5.2.* ***(1 mark)*** *Meaning of 'Z' and 'Y' (and 'X') in 6.1.3.1(c)(i), Chapter 6.1.* ***(1 mark)***

5. Your transport company is to collect a pallet of UN 1905 from a consignor in Rome, Italy, to take to Landskrona, Sweden. On the pallet are 100 boxes with inner packaging's. Each inner packaging contains 1 kg of the substance and the boxes weigh 5 kg each.

a) Would the boxes have to be UN certified? Explain your answer fully.

Solution: *Yes. Limited Quantities provisions of '0 kg' per inner packaging applies to this substance; hence Limited Quantities provisions do not, and cannot, apply to this substance.* ***(1 mark)***
As '0' has been indicated for this substance, it is not permitted to carry this substance in accordance with the Limited Quantities provisions. ***(2 marks)***

(4)

Reference(s):	*2017ADR: The Dangerous Goods List, column (7a), Table A, Chapter 3.2. Subparagraph 3.4.1, Chapter 3.4* ***(1 mark)***

b) The boxes have been covered with a black plastic film before banding to the pallet. The mark 'UN 1905' has been placed on the plastic film. Is this sufficient marking and/or labelling to allow the order to be collected?

Solution: *No. The boxes have been formed into an 'overpack'. As each of the inner packages is above the Limited Quantities allowance, the overpack has to be fully marked and labelled.* ***(1 mark)*** *It is a requirement that all marks and labels on the boxes should also appear on the overpack together with the word 'OVERPACK'; unless they are visible through the plastic covering, which is most unlikely as the plastic covering is black.* ***(1 mark)*** *As this is not the case, the overpack should be marked with the word 'OVERPACK' and the UN number UN 1905 and labelled with a No. 8 corrosive label. The word 'OVERPACK' should be in Italian (official language of Italy, country of origin) and also in English, French or German.* ***(1 mark)***

(5)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1) and (5), Chapter 3.2.* ***(1 mark)*** *Subparagraphs 5.2.1.1 and 5.2.2.1.1, Chapter 5.2; and subparagraph 5.1.2.1, Chapter 5.1.* ***(1 mark)***

6. What is the activity concentration for exempt material for radionuclide Mn-52?

Solution: *1 x 10^1 Bq/g (i.e. 10 Bq/g)* ***(2 marks)***

(3)

Reference(s):	*2017 ADR: The table in subparagraph 2.2.7.2.2.1, Chapter 2.2.7* ***(1 mark)***

7. A temperature controlled self-reactive substance of Class 4.1 is to be carried from Oporto, Portugal, to Bilbao, Spain. What additional information has to be shown on the transport document?

Solution: *The control and emergency temperatures* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: Subparagraph 5.4.1.2.3.1, Chapter 5.4.* ***(1 mark)***

8. Dangerous goods are to be transported internationally by road and air within Europe. Apart from ADR, what other international regulations would apply to this consignment?

Solution: *The ICAO Technical Instructions* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: Subparagraph 1.1.4.2, Chapter 1.1, and the definition in subparagraph 1.2.1, Chapter 1.2.* ***(1 mark)***

[END OF QUESTION PAPER]

SAMPLE ROAD Mode Paper
Dangerous Goods Safety Adviser Examination Paper

50 Marks. Pass Mark 65% (32.5 marks)

Answer ALL questions

Give your answer in the space provided below each question.

Attempt ONE Case Study from Section A and ALL questions in Section B
[Note: Three 'Case Studies' are given in this Sample Paper – four are contained in an actual examination]

SECTION A

Answer ONE of the following Case Studies. You have a choice of three.

Case Study 1A

Tank-vehicles are to carry ammonium nitrate liquid (hot solution of 85% concentration) from Vienna in the German speaking country of Austria to Barcelona, Spain; passing through some road tunnels with restrictions. It is a contractual requirement that a sample of the substance is sent in advance to the consignee for evaluation before delivery. The consignor also wishes to explore the possibility of delivery of the substance in a dry, powdery form, as ammonium nitrate based fertilizer in bulk to see if this is a cheaper option.

a) What is the Class and UN number of the liquid substance?

(3)

Reference(s):	

b) Is the transport of the ammonium nitrate liquid in tank-vehicles permitted? Explain how you reached your conclusion.

(3)

Reference(s):	

c)

i. Show the dangerous goods information that should be shown in the transport document on the outward laden journey to Barcelona.

ii. In what language(s) should the transport document be prepared? Be as explicit in your answer as you can.

iii. Show the dangerous goods information that should be shown on the transport document when the tank-vehicle returns empty, unclean, to the consignor in Vienna after delivery.

(7)

Reference(s):	

d)

i. What marking plates should be affixed and where to the tank-vehicles? Give full details of what is required for the tank-vehicles.

ii. What placards are required to be affixed to the tank-vehicles and where?

(6)

Reference(s):	

e)

i. **What is the minimum total capacity of fire extinguishers with which the tank-vehicles should be equipped? Each tank-vehicle has a maximum permissible mass of 24 tonnes.**

ii. **What is the minimum capacity of the fire extinguisher for fighting a fire in the engine or cab of the vehicle?**

iii. **What is the minimum capacity of at least one other fire extinguisher with which the tank-vehicles should be equipped?**

iv. **What details should be inscribed on the fire extinguishers?**

v. **With what standard should the fire extinguishers comply? You may be brief in your answer.**

(6)

Reference(s):	

f) Can the samples of ammonium nitrate liquid be sent forward in advance of the tanker deliveries as Limited Quantities packages? Explain your answer as fully as you can.

(3)

Reference(s):	

g)

i. **Is transport of UN 2067 Ammonium Nitrate Based Fertilizer in bulk allowed?**

ii. Name the conditions that apply to its carriage in bulk in a vehicle.

(7)

Reference(s):	

[Go to Section B]

Case Study 1B

Mendit Fast Ltd.'s business is concerned with supplying the motor vehicle trade with all its needs. It is involved in supplying a variety of substances, mixtures and articles for this industry's needs.

a) **Supplying wet batteries, non-spillable, form a significant part of the company's trade. State the Class, UN number and classification code assigned to these articles.**

(4)

Reference(s):	

b) **Some of the articles it supplies are replacement air bag modules for some of the car manufacturers. The sales manager notes that these could be explosive articles, UN 0503 of Class 1, or miscellaneous dangerous goods, UN 3268 of Class 9. The manager asks you as the company's DGSA to help them understand the difference between the two classifications. What would you advise?**

(4)

Reference(s):	

c) The following consignment is to be dispatched on one of the company's 5 tonne maximum permissible gross mass delivery vans:

- **5 x 25 litre drums of flammable paint of Class 3, UN 1263, packing group III**
- **4 x 25 litre jerricans of a degreasant called trichloroethylene, UN 1710**

Would the driver need to have a valid ADR driver training certificate? Explain your answer as fully as possible.

(10)

Reference(s):	

d) Many of the packaged goods loads that are carried on the company's vehicles require the vehicles to be marked with reflectorized orange-coloured plates, because of the amounts of dangerous goods they are carrying.

i. What are the minimum dimensions of these plates (ignoring any exemptions)?

ii. Where should they be displayed?

iii. What should happen to the plates once the packaged dangerous goods have been unloaded?

iv. State a requirement with respect to fire resistance that any covers for these plates should have.

(6)

Reference(s):	

e)

i. What is the minimum total capacity of fire extinguishers with which the 5 tonne vehicles should be equipped?

ii. What is the minimum capacity of the fire extinguisher for fighting a fire in the engine or cab of the vehicle?

iii. What is the minimum capacity of at least one other fire extinguisher with which these vehicles should be equipped?

iv. **In what circumstances could the number of fire extinguisher be reduced to just 1 x 2 kg extinguisher?**

v. **What details should be inscribed on the fire extinguishers?**

vi. **With what standard should the fire extinguishers comply? You may be brief in your answer.**

(8)

Reference(s):	

f)

i. **One of the drivers of the larger vehicles carrying dangerous goods asks their manager for a helper to accompany them to unload. Is this permissible?**

ii. **A friend of the helper who works at the company next door to Mendit Fast Ltd. on the night shift asks the driver, as they set out on morning deliveries for a lift home, as they will be passing nearby. Is this permissible?**

(3)

Reference(s):	

[Go to Section B]

Case Study 1C

Lynch Haulage (1972) Ltd. is an international trailer operator based in County Meath. A driver returning to Ireland is asked to collect a mixed consignment of packaged dangerous goods. The dangerous goods are to be collected in Milan, Italy, and Zurich, Switzerland, to consignees in Mullingar and Dundalk. For the purposes of this case study, ignore any implications of a journey by sea.

a) The consignment from Zurich consists of 100 x 50 kg gross palletised fibreboard drums of solid UN 1620.

i. Identify this substance.

ii. The drums are UN certified and have the detail '1G' in the code. Is this packaging with this code authorised for filling with this substance? Explain your answer.

iii. What danger marks and labels should be shown on the drums? Be as specific as you can in your answer

(7)

Reference(s):	

b) The consignment from Milan consists of 20 palletised 10 litre drums of UN 1994. Each drum has a maximum gross mass of 15 kg.

i. Identify this substance.

ii. What danger marks and labels should appear on the drums? State your answer as fully as you can.

(4)

Reference(s):	

c)

i. Show the dangerous goods information that should be shown in the transport document for the UN 1994 drums.

ii. **In what language(s) should the transport document be prepared? Be as specific as you can in your answer and draw a conclusion.**

(5)

Reference(s):	

d)

i. **During the journey, back from Milan to Ireland having collected both consignments, the driver finds themselves unable to find a depot, factory or supervised lorry park to leave their vehicle overnight. What further choices are open to them? Justify your answer fully with reference to the quantities of both of the substances forming the load and any relevant thresholds. The driver has already made both collections when this problem arises.**

ii. **Are there any circumstances when the Competent Authority has to be involved in any of the decisions taken by the driver concerning places where to stop?**

(6)

Reference(s):	

e) **The driver employed by Lynch Haulage (1972) Ltd. is a Romanian. Their command of the English language is not good enough to understand the instructions in writing provided by the employer in English. What action should the employer take?**

(2)

Reference(s):	

f)

i. **What marking plates should appear on the vehicle and where should they be placed?**

ii. **What are the minimum dimensions of the plates, noting that it is a large vehicle?**

(3)

Reference(s):	

g)

i. **State the three items of miscellaneous equipment that must be carried on the vehicle for all danger label numbers (noting the label numbers of the two substances forming the load).**

ii. **State any two items of equipment for the personal protection of the vehicle crew that must be carried on board the vehicle.**

iii. **Why is it necessary for each member of the vehicle crew to be equipped with an emergency escape mask?**

iv. For which of the two substances is it necessary for a collecting container and why?

(5)

Reference(s):	

h) After unloading the UN 1620, some of the substance is noticed on the floor of the trailer. The driver still has to make a second delivery of UN 1994 to Dundalk. What should be done next?

(3)

Reference(s):	

[Go to Section B]

SECTION B

Answer ALL Questions

2. **There is a possibility that clinical waste of UN 3291 may be carried on the same vehicle as animal feeds. Would you consider this permissible? If so, state your reasons.**

(7)

Reference(s):	

3.

i. **Name one type of person who can be a DGSA.**

ii. **For what minimum period shall the DGSA annual report be kept?**

iii. **For how long is a DGSA training certificate valid?**

(4)

Reference(s):	

4.

a) **What are the minimum outer dimensions of:**

i. **A danger label for packages?**

ii. **A placard for tanks?**

b) Whose duty is it to affix danger labels (to packages) according to ADR?

(4)

Reference(s):	

END OF QUESTION PAPER

SAMPLE ROAD Mode Paper
Dangerous Goods Safety Adviser Examination Paper
[Solutions and Marking Scheme]
50 Marks. Pass Mark 65% (32.5 marks)

Answer ALL questions

Give your answer in the space provided below each question.

Attempt ONE Case Study from Section A and ALL questions in Section B
[Note: Three 'Case Studies' are given in this Sample Paper – four are contained in an actual examination]

SECTION A

Answer ONE of the following Case Studies. You have a choice of three.

Case Study 1A

Tank-vehicles are to carry ammonium nitrate liquid (hot solution of 85% concentration) from Vienna in the German speaking country of Austria to Barcelona, Spain; passing through some road tunnels with restrictions. It is a contractual requirement that a sample of the substance is sent in advance to the consignee for evaluation before delivery. The consignor also wishes to explore the possibility of delivery of the substance in a dry, powdery form, as ammonium nitrate based fertilizer in bulk to see if this is a cheaper option.

a) What is the Class and UN number of the liquid substance?

Solution: Class 5.1, UN2426 ***(2 marks)***

(3)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1) and (2), and Table B, Chapter 3.2.* ***(1 mark)***

b) Is the transport of the ammonium nitrate liquid in tank-vehicles permitted? Explain how you reached your conclusion.

Solution: Yes. ***(1 mark)*** *Because a tank code is given in column (12) of The Dangerous Goods List, Table A.* ***(1 mark)***

(3)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (12), Chapter 3.2.* ***(1 mark)***

c)

i. Show the dangerous goods information that should be shown in the transport document on the outward laden journey to Barcelona.

Solution: *UN 2426 Ammonium Nitrate Liquid, 5.1, (E).* ***(2 marks: 1 mark for the details to 'Liquid' and 1 mark for the remainder)***

ii. In what language(s) should the transport document be prepared? Be as explicit in your answer as you can.

Solution: *In the language of the country of origin and, if that is not English, French or German, also in English, French or German. Therefore, as German is the official language in Austria, it is sufficient for the document to be written just in German.* ***(2 marks)***

iii. Show the dangerous goods information that should be shown on the transport document when the tank-vehicle returns empty, unclean, to the consignor in Vienna after delivery.

Solution: *The transport document for the outward journey may be used. The indication of the quantity to be eliminated and replaced by the words – 'EMPTY, UNCLEANED RETURN'.* ***(2 MARKS)***
[The provisions of subparagraphs 5.4.1.1.6.1 or 5.4.1.1.6.2.2 may also be used]

(7)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1), (2), (3a) and (4), Chapter 3.2. Subparagraphs 5.4.1.1.1 and 5.4.1.1.6.2.3, Chapter 5.4* ***(1 mark)****.*

d)

i. What marking plates should be affixed and where to the tank-vehicles? Give full details of what is required for the tank-vehicles.

Solution: *Either: Two plain reflectorized orange-coloured plates, one at the front and one at the rear of the vehicle; and two reflectorized orange-coloured plates, bearing the inscription 59 on the top part and 2426 on the lower part, on each side of the tank.*

Or: Two reflectorized orange-coloured plates, bearing the inscription 59 on the top part and 2426 on the lower part, one at the front and one at the rear of the vehicle.

(3 marks for either solution, with 1 of the marks for the correct detail 59/2426)

ii. What placards are required to be affixed to the tank-vehicles and where?

Solution: An oxidizing No. 5.1 placard on each side and the rear of the vehicle.
(2 marks: I mark for identifying the placard and 1 mark for stating the correct position)

(6)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1), (5) and (20), Chapter 3.2; and subparagraphs 5.3.1.4.1, 5.3.2.1.1 and 5.3.2.1.2 or 5.3.2.1.6, Chapter 5.3.* ***(1 mark)***

e)

i. What is the minimum total capacity of fire extinguishers with which the tank-vehicles should be equipped? Each tank-vehicle has a maximum permissible mass of 24 tonnes.

Solution: 12 kg dry powder. ***(1 mark)***

ii. What is the minimum capacity of the fire extinguisher for fighting a fire in the engine or cab of the vehicle?

Solution: 2 kg dry powder. ***(1 mark)***

iii. What is the minimum capacity of at least one other fire extinguisher with which the tank-vehicles should be equipped?

Solution: 6 kg dry powder. ***(1 mark)***

iv. What details should be inscribed on the fire extinguishers?

Solution: A mark of compliance with a standard recognised by the Competent Authority and the date (month, year) of the next recurrent inspection, or of the maximum permissible period of use, as applicable. ***(1 mark when both details are stated)***

v. With what standard should the fire extinguishers comply? You may be brief in your answer.

Solution: EN 3, portable fire extinguishers. ***(1 mark)***

(6)

Reference(s):	*2017 ADR: Paragraphs 8.1.4.1, 8.1.4.3 and 8.1.4.4, Chapter 8.1.* ***(1 mark)***

f) Can the samples of ammonium nitrate liquid be sent forward in advance of the tanker deliveries as Limited Quantities packages? Explain your answer as fully as you can.

Solution: *No.* ***(1 mark)***
'0' appears in column (7a) of the Dangerous Goods List, Table A, meaning that there is no Limited Quantities allowance for it. ***(1 mark)***

(3)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (7a), Chapter 3.2; and subparagraph 3.4.1, Chapter 3.4.* ***(1 mark)***

g)

i. Is transport of UN 2067 Ammonium Nitrate Based Fertilizer in bulk allowed?

Solution: *Yes.* ***(1 mark)***
Because the codes BK1, BK2 and BK3 are in column (10) and VC1 and VC2 are in column (17) of the Dangerous Goods List, Table A, for this substance. ***(2 marks: 1 mark for identifying the code in column (10) and 1 mark for identifying the code in column (17))***

ii. Name the conditions that apply to its carriage in bulk in a vehicle.

Solution: *If the vehicle is made of wood or other combustible material, an impermeable surfacing resistant to combustion or a coating of sodium silicate or similar substance shall be provided. Sheeting shall also be impermeable and non-combustible.* ***(1 mark)***
Carriage in bulk shall only be as a full load. ***(1 mark)***

(7)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (10) and (17), Chapter 3.2.* ***(1 mark)*** *Meaning of additional provisions AP6 and AP7 in subparagraph 7.3.3.2.4, Chapter 7.3.* ***(1 mark)***

[Go to Section B]

Case Study 1B

Mendit Fast Ltd.'s business is concerned with supplying the motor vehicle trade with all its needs. It is involved in supplying a variety of substances, mixtures and articles for this industry's needs.

a) Supplying wet batteries, non-spillable, form a significant part of the company's trade. State the Class, UN number and classification code assigned to these articles.

Solution: *Class 8.* ***(1 mark)*** *UN 2800.* ***(1 mark)*** *classification code C11.* ***(1 mark)***

(4)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1), (2), (3a) and (3b); and Table B, Chapter 3.2* ***(1 mark)***

b) Some of the articles it supplies are replacement air bag modules for some of the car manufacturers. The sales manager notes that these could be explosive articles, UN 0503 of Class 1, or miscellaneous dangerous goods, UN 3268 of Class 9. The manager asks you as the company's DGSA to help them understand the difference between the two classifications. What would you advise?

Solution: *UN 3268 has Special provision 280.* ***(1 Mark)***
Special provision 280 permits the air bag modules to be assigned to UN 3268; if they have been tested, in accordance with Test series 6(c) of Part 1 of the Manual of Tests and Criteria, and there is no explosion of the device, no fragmentation of the device casing or pressure receptacle, and no projection hazard nor thermal effect which would significantly hinder fire-fighting or emergency response efforts in the immediate vicinity. ***(2 marks)***

(4)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (6), and Table B, Chapter 3.2. Special provision 280 in paragraph 3.3.1, Chapter 3.3.* ***(1 mark)***

c) The following consignment is to be dispatched on one of the company's 5 tonne maximum permissible gross mass delivery vans:

- **5 x 25 litre drums of flammable paint of Class 3, UN 1263, packing group III**
- **4 x 25 litre jerricans of a degreasant called trichloroethylene, UN 1710**

Would the driver need to have a valid ADR driver training certificate? Explain your answer as fully as possible.

Solution: *'5 L' appears in the Dangerous Goods List, Table A, column (7a) for both UN 1263, packing group III, and UN 1710, indicating that 5 litres is the maximum quantity per inner packaging for the Limited Quantities to apply. Hence this exemption does not apply and the driver may need to have a valid driver training certificate.* ***(1 mark)***
Establish if the exemptions in the provisions of paragraph 1.1.3.6 of Chapter 1.1 could apply. ***(2 marks)*** *UN 1263, packing group III, is a Transport category 3 substance while UN 1710 is a Transport category 2 substance.* ***(2 marks)*** *Using the formula in subparagraph 1.1.3.6, the 100 litres of UN 1710 is multiplied by 3 to give a number of '300', while the125 litres of UN 1263, packing group III, is multiplied by 1 to give a number of '125'. These two numbers are added together to give a total number of '425'.* ***(2 marks)*** *As this total number is less than the threshold of '1000', the provisions of paragraph 1.1.3.6 apply; and therefore the driver does not need to have a driver training certificate.* ***(2 marks)***

(10)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (7a) and (15), Chapter 3.2; and subparagraphs 1.1.3.6.1, 1.1.3.6.2, 1.1.3.6.3 and1.1.3.6.4, Chapter 1.1.3.* ***(1 mark)***

d) Many of the packaged goods loads that are carried on the company's vehicles require the vehicles to be marked with reflectorized orange-coloured plates, because of the amounts of dangerous goods they are carrying.

i. What are the minimum dimensions of these plates (ignoring any exemptions)?

Solution: *40 cm base x 30 cm high with a 15 mm wide black border.* ***(2 marks: 1 mark for 40 cm x 30 cm and 1 mark for 15 mm border)***

ii. Where should they be displayed?

Solution: *One at the front and one at the rear of the vehicle.* ***(1 mark)***

iii. What should happen to the plates once the packaged dangerous goods have been unloaded?

Solution: *They should be removed or covered up.* ***(1 mark)***

iv. State a requirement with respect to fire resistance that any covers for these plates should have.

Solution: *They should be capable of resisting fire engulfment for up to 15 minutes.* ***(1 mark)***

(6)

Reference(s):	*2017 ADR: Paragraphs 5.3.2.1.1, 5.3.2.1.8 and 5.3.2.2.1, Chapter 5.3.* ***(1 mark)***

e)

i. What is the minimum total capacity of fire extinguishers with which the 5 tonne vehicles should be equipped?

Solution: *8 kg.* ***(1 mark)***

ii. What is the minimum capacity of the fire extinguisher for fighting a fire in the engine or cab of the vehicle?

Solution: *2 kg* ***(1 mark)***

iii. What is the minimum capacity of at least one other fire extinguisher with which these vehicles should be equipped?

Solution: *6 kg* ***(1 mark)***

iv. In what circumstances could the number of fire extinguisher be reduced to just 1 x 2 kg extinguisher?

Solution: *When all the dangerous goods in the load are in accordance with the provisions of paragraph 1.1.3.6. Also when all the dangerous goods in the load are subject to Special provision S3 of Chapter 8.5 (i.e. transport units carrying only infectious substances of Class 6.2).* ***(2 marks)***

v. What details should be inscribed on the fire extinguishers?

Solution: *A mark of compliance with a standard recognised by the Competent Authority and a date (month, year) of the next recurrent inspection or of the maximum permissible period of use, as applicable.* ***(I mark when both details are stated)***

vi. With what standard should the fire extinguishers comply? You may be brief in your answer.

Solution: EN 3 Portable fire extinguishers. ***(1 mark)***

(8)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (19), Chapter 3.2; subparagraphs 8.1.4.1, 8.1.4.2, 8.1.4.3 and 8.1.4.4, Chapter 8.1; and Chapter 8.5.* ***(1 mark)***

f)

i. One of the drivers of the larger vehicles carrying dangerous goods asks their manager for a helper to accompany them to unload. Is this permissible?

Solution Yes, provided the helper has received training in the carriage of dangerous goods appropriate to the responsibilities and duties in accordance with Chapter 1.3. ***(1 mark)***

ii. A friend of the helper who works at the company next door to Mendit Fast Ltd. on the night shift asks the driver, as he sets out on morning deliveries, for a lift home as they will be passing nearby. Is this permissible?

Solution: No, because the friend would be deemed to be a passenger; and passengers are not allowed. ***(1 mark)***

(3)

Reference(s):	*2017 ADR: Paragraphs 1.3.1 and 1.3.2, Chapter 1.3; paragraph 8.2.3, Chapter 8.2; and paragraph 8.3.1, Chapter 8.3.* ***(1 mark)***

[Go to Section B]

Case Study 1C

Lynch Haulage (1972) Ltd. is an international trailer operator based in County Meath. A driver returning to Ireland is asked to collect a mixed consignment of packaged dangerous goods. The dangerous goods are to be collected in Milan, Italy, and Zurich, Switzerland, to consignees in Mullingar and Dundalk. For the purposes of this case study, ignore any implications of a journey by sea.

a) The consignment from Zurich consists of 100 x 50 kg gross palletised fibreboard drums of solid UN 1620.

i. Identify this substance.

Solution: *Lead cyanide.* ***(I mark)***

ii. The drums are UN certified and have the detail '1G' in the code. Is this packaging with this code authorised for filling with this substance? Explain your answer.

Solution: *The '1G' in the UN Packaging Code indicates a fibreboard drum. Packing instruction P002 applies to this substance. The use of fibreboard drums, with '1G' in the UN Packaging Code, is authorised in P002.* ***(2 marks)***

iii. What danger marks and labels should be shown on the drums? Be as specific as you can in your answer

Solution: *The drums should be marked with the UN number, i.e. UN 1620.* ***(1 mark)*** *They should be labelled with a No. 6.1 toxic label.* ***(1 mark)***

(7)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1), (2), (5) and (8), Chapter 3.2; packing instruction P002 in subparagraph 4.1.4.1, Chapter 4.1;* ***(1 mark)*** *subparagraphs 5.2.1.1 and 5,2,2,1,1, Chapter 5.2.* ***(1 mark)***

b) The consignment from Milan consists of 20 palletised 10 litre drums of UN 1994. Each drum has a maximum gross mass of 15 kg.

i. Identify this substance.

Solution: *Iron pentacarbonyl.* ***(1 mark)***

ii. What danger marks and labels should appear on the drums? State your answer as fully as you can.

Solution: *They should be marked with the UN number, i.e. UN 1994.* ***(I mark)*** *They should be labelled with a No. 6.1 toxic and a No. 3 flammable liquid labels.* ***(1 mark)***

(4)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1) and (5), Chapter 3.2; subparagraphs 5.2.1.1 and 5.2.2.1.1, Chapter 5.2.* ***(1 mark)***

c)

i. Show the dangerous goods information that should be shown in the transport document for the UN 1994 drums.

Solution: *UN 1994 Iron Pentacarbonyl, 6.1(3), I, (C/D).* ***(2 marks: 1 mark to 'Pentacarbonyl' and 1 mark for the remainder)***

ii. In what language(s) should the transport document be prepared? Be as specific as you can in your answer and draw a conclusion.

Solution: *In the language of country of origin and (if that is not English, French or German) also in English, French or German. Therefore, in Italian and English or French or German.* ***(2 marks)***

(5)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, columns (1), (2), (3a), (4) and (5), Chapter 3.2; subparagraphs 5.4.1.1.1 and 5.4.1.4.1, Chapter 5.4.* ***(1 mark)***

d)

i. During the journey, back from Milan to Ireland having collected both consignments, the driver finds themselves unable to find a depot, factory or supervised lorry park to leave their vehicle overnight. What further choices are open to them? Justify your answer fully with reference to the quantities of both of the substances forming the load and any relevant thresholds. The driver has already made both collections when this problem arises.

Solution: *The UN 1994 drums weigh a total of 300 kg. Special operating provision S14 applies to the carriage of the UN 1994 substance. Special operating provision S14 stipulates that the provisions of Chapter 8.4, concerning the supervision of vehicles, applies to a vehicle carrying any amount of this substance.* ***(1 mark)***

The UN 1620 drums weigh a total of 5000 kg. Special operating provision S19 applies when more than 5,000 kg of UN 1620 substance is carried in the load; and hence the provisions of Chapter 8.4 do not apply to the carriage of this substance. However, because they apply due to the presence of UN 1994 in the load, the provisions of Chapter 8.4 applies to the overnight parking of the vehicle. ***(1 mark)***

The only options left to the driver are to find, in order of preference, (a) a public or private vehicle park, where the vehicle is not likely to suffer damage from other vehicles; ***(1 mark)*** *or (b) a suitable open space separated from the public highway and from dwellings, where the public does not normally pass or assemble.* ***(1 mark)***

ii. Are there any circumstances when the Competent Authority has to be involved in any of the decisions taken by the driver concerning places where to stop?

Solution: *As special operating provision S9 applies (it in fact applies to both substances), the permission of the Competent Authority is needed if the stopping place is near any inhabited or frequented places.* ***(1 mark)***

(6)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (19), Chapter 3.2; Chapter 8.4; and meaning of S9, S14 and S19 in Chapter 8.5.* ***(1 mark)***

e) The driver employed by Lynch Haulage (1972) Ltd. is a Romanian. Their command of the English language is not good enough to understand the instructions in writing provided by the employer in English. What action should the employer take?

Solution: *The instructions in writing must be provided to the driver in a language that he can read and understand, i.e. in Romanian in this case.* ***(1 mark)***

(2)

Reference(s):	*2017 ADR: Subparagraph 5.4.3.2, Chapter 5.4.* ***(1 mark)***

f)

i. What marking plates should appear on the vehicle and where should they be placed?

Solution: *Two reflectorized orange-coloured plates, one at the front and one at the rear of the vehicle.* ***(1 mark)***

ii. What are the minimum dimensions of the plates, noting that it is a large vehicle?

Solution: *40 cm base x 30 cm high, with a 15 mm black border.* ***(1 mark)***

(3)

Reference(s):	*2017 ADR: Subparagraphs 5.3.2.1.1 and 5.3.2.2.1 (or 5.3.2.2.3), Chapter 5.3.* ***(1 mark)***

g)

i. State the three items of miscellaneous equipment that must be carried on the vehicle for all danger label numbers (noting the label numbers of the two substances forming the load).

Solution: *At least one wheel chock*
Two self-standing warning signs
Eye rinsing liquid. ***(1 mark)***

ii. State any two items of equipment for the personal protection of the vehicle crew that must be carried on board the vehicle.

Solution: *Any two from:*
A warning vest
Portable lighting apparatus
A pair of protective gloves
Eye protection. ***(1 mark)***

iii. Why is it necessary for each member of the vehicle crew to be equipped with an emergency escape mask?

Solution: *Because both substances require the No. 6.1 toxic label.* ***(1 mark)***

iv. For which of the two substances is it necessary for a collecting container and why?

Solution: *UN 1994, as it requires a No. 3 flammable liquid label.* ***(1 mark)***

(5)

Reference(s):	*2017 ADR: Subparagraphs 5.4.3.4, Chapter 5.4; or subparagraphs 8.1.5.2 and 8.1.5.3, Chapter 8.1.* ***(1 mark)***

h) After unloading the UN 1620, some of the substance is noticed on the floor of the trailer. The driver still has to make a second delivery of UN 1994 to Dundalk. What should be done next?

Solution: *Loading, unloading and handling special provision CV13 applies to both substances. CV13 stipulates that, if any substance to which CV13 has been assigned has leaked and been spilled in the vehicle, the vehicle may not be reused until it has been thoroughly cleaned and, if necessary, disinfected or decontaminated; and the other goods carried in the vehicle examined for possible contamination.* ***(2 marks)***

(3)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (18), Chapter 3.2; and loading, unloading and handling special provision CV13 in subparagraph 7.5.11, Chapter 7.5.* ***(1 mark)*** *[Note: Answers based on subparagraph 7.5.8.1 are not acceptable]*

[Go to Section B]

SECTION B

Answer ALL Questions

2. There is a possibility that clinical waste of UN 3291 may be carried on the same vehicle as animal feeds. Would you consider this permissible? If so, state your reasons.

Solution: *Loading, unloading and handling special provision CV28 applies to UN 3291.* ***(1 mark)***

CV28 invokes the provisions of paragraph 7.5.4. ***(1 mark)***

Paragraph 7.5.4 states that this may be permissible provided the UN 3291 clinical waste is kept apart from the animal feeds:

- *by complete partitions which should be as high as the packages of UN 3291 clinical waste;*
- *by packages not bearing labels conforming to models Nos. 6.1, 6.2, or 9 or packages bearing labels conforming to model No. 9 but not containing goods of UN Nos. 2212, 2315, 2590, 3151, 3152, or 3245; or*
- *by a space of at least 0.8 m;*

unless the packages bearing the said labels are provided with an additional packaging or are completely covered (e.g. by a sheeting, a fibreboard cover or other measures). ***(4 marks)***

(7)

Reference(s):	*2017 ADR: The Dangerous Goods List, Table A, column (18), Chapter 3.2; and paragraphs 7.5.4 and 7.5.11, Chapter 7.5.* ***(1 mark)***

3.

i. Name one type of person who can be a DGSA.

Solution: *Head of undertaking.* ***(1 mark)***

ii. For what minimum period shall the DGSA annual report be kept?

Solution: *Five years.* ***(1 mark)***

iii. For how long is a DGSA training certificate valid?

Solution: *Five years.* ***(1 mark)***

(4)

Reference(s):	*2017 ADR: Subparagraphs 1.8.3.3, 1.8.3.4 and 1.8.3.16, Chapter 1.8.* ***(1 mark)***

4.

a) What are the minimum outer dimensions of:

i. A danger label for packages?

Solution: *At least 100 mm x 100 mm.* ***(1 mark)***

ii. A placard for tanks?

Solution: *At least 250 mm x 250 mm.* ***(1 mark)***

b) Whose duty is it to affix danger labels (to packages) according to ADR?

Solution: *The packer.* ***(1 mark)***

(4)

Reference(s):	*2017 ADR: Subparagraph 1.4.3.2(b), Chapter 1.4; and subparagraphs 5.2.2.2.1.1 and 5.3.1.7.1, Chapter 5.3.* ***(1 mark)***

END OF QUESTION PAPER