

0101/214      0302/214  
0103/214      0304/214  
0105/214      0305/214  
0106/214      0401/214  
0202/214      0404/214  
0301/214      0405/214

**APPLIED GEOMETRY**

**Oct./Nov. 2021**

**Time: 3 hours**



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**ARTISAN CERTIFICATE**

**GENERAL FITTER  
MOTOR VEHICLE MECHANICS  
AGRICULTURAL MECHANICS  
WELDING AND FABRICATION  
ELECTRICAL INSTALLATION  
CARPENTRY AND JOINERY**

**PAINTING AND DECORATING  
MASONRY  
PLUMBING  
GARMENT MAKING  
LEATHERWORK TECHNOLOGY  
GENERAL AGRICULTURE**

**APPLIED GEOMETRY**

**3 hours**

**INSTRUCTIONS TO CANDIDATES**

*You should have the following for this examination:*

*Drawing papers;*

*Mathematical tables/Scientific calculator;*

*Drawing instruments.*

*This paper consists of SIXTEEN (16) questions in THREE sections; A, B and C.*

*Answer ALL questions in section A, ONE question from section B and TWO questions from section C.*

*Answers to the questions must be done on the drawing papers provided.*

*All questions carry equal marks.*

*Maximum marks for each part of a question are indicated.*

*Candidates should answer the questions in English.*

**This question paper consists of 12 printed pages.**

**Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

SECTION A (40 marks)

Answer ALL the questions in this section.

1. Figure 1 shows a front elevation and a plan of a shaped object drawn in 1<sup>st</sup> angle orthographic projection.

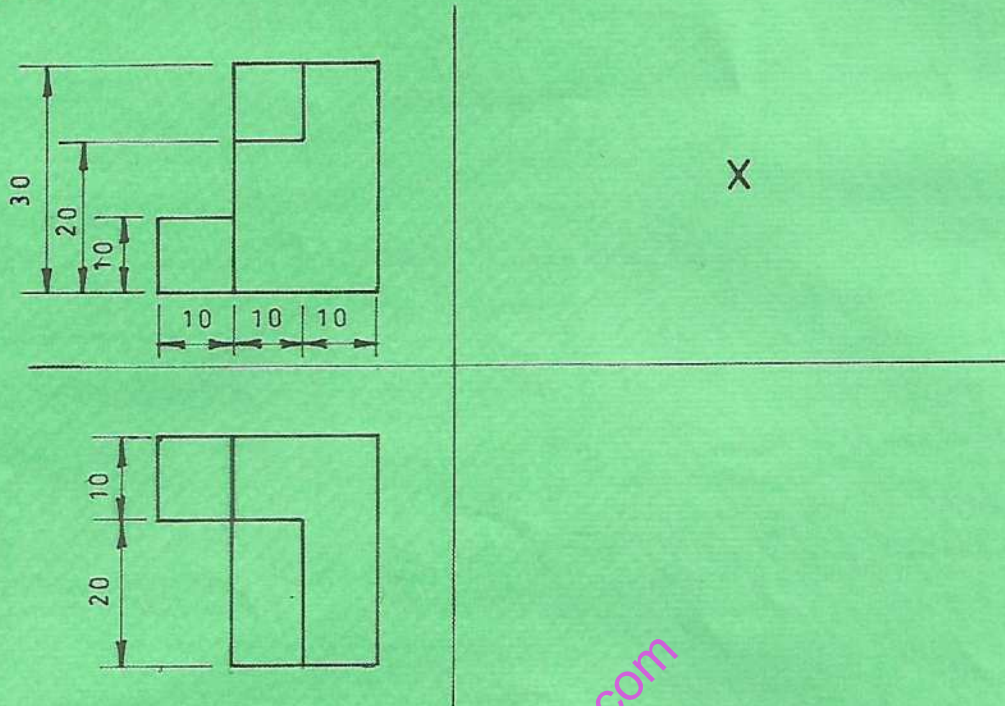


Fig.1

Redraw the elevations and construct the missing end elevation.

(4 marks)

2. Figure 2 shows a pictorial view of a hexagonal bolt.

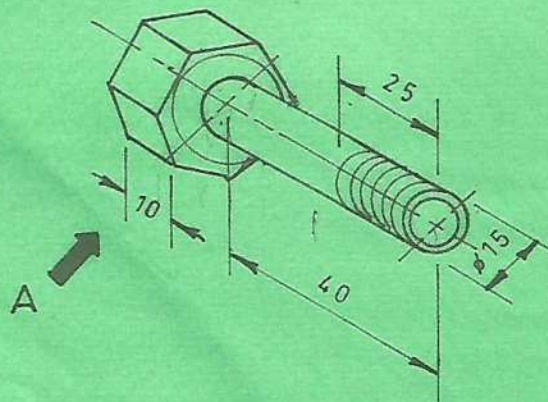


Fig. 2

Draw the front elevation in the direction of arrow A.

(4 marks)

0101/214	0202/214	0305/214
0103/214	0301/214	0401/214
0105/214	0302/214	0404/214
0106/214	0304/214	0405/214

2

3. Figure 3 shows a circle of radius 25 mm whose centre line is 40 mm above line Y - Y.

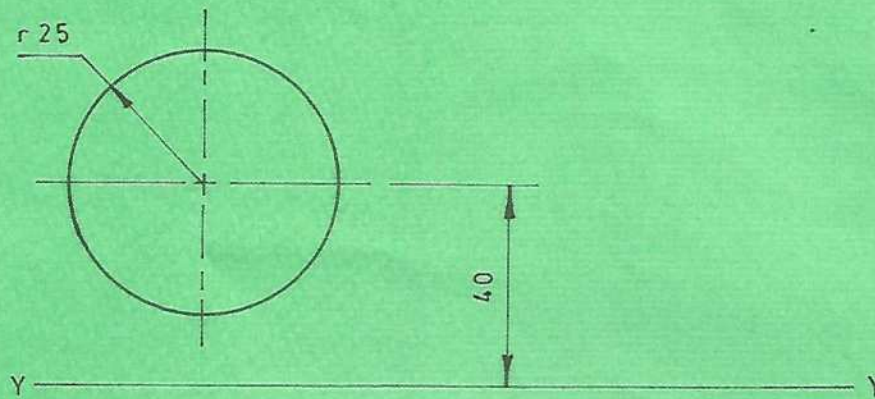


Fig. 3

Draw an external tangential arc of radius 60 mm to touch both the circle and line Y - Y.

(3 marks)

4. Figure 4 shows a cone of base diameter 60 mm and a vertical height of 60 mm cut by a plane Z-Z.

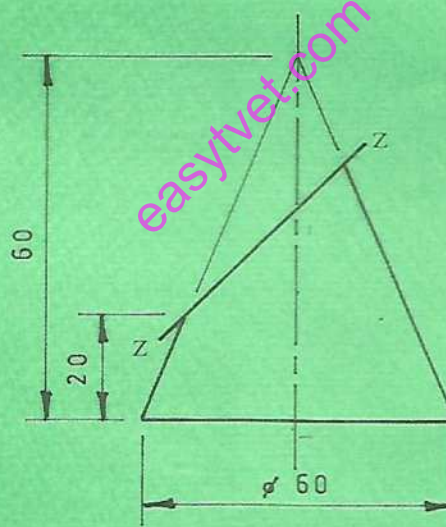


Fig. 4

Draw the true shape of the cut surface.

(5 marks)

0101/214	0202/214	0305/214
0103/214	0301/214	0401/214
0105/214	0302/214	0404/214
0106/214	0304/214	0405/214

Oct./Nov. 2021

5. Figure 5 shows orthographic views of a shaped block drawn in 1<sup>st</sup> angle projection.

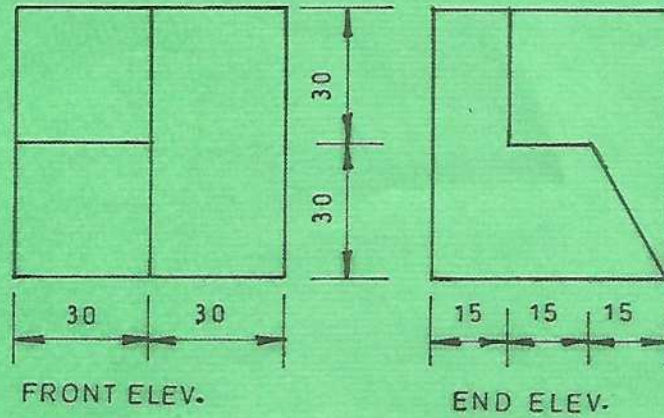


Fig. 5

Draw the plan.

(4 marks)

6. Figure 6 shows a right cone of base diameter 50 mm and a height of 50 mm cut at a height of 35 mm.

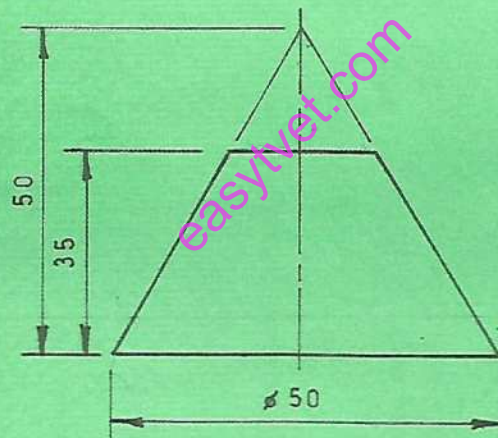


Fig. 6

Draw the development of the remaining part of the cone.

(5 marks)

7. Figure 7 shows orthographic views of a square pyramid with part of it cut off.

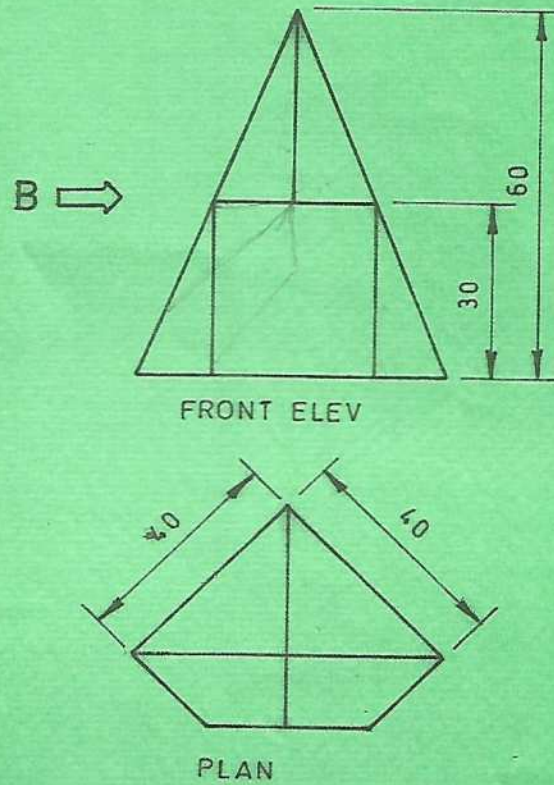


Fig.7

Draw the end elevation of the pyramid when viewed in the direction of arrow B. (5 marks)

8. Figure 8 shows a circle of diameter 60 mm with point P placed 60 mm outside the circle.

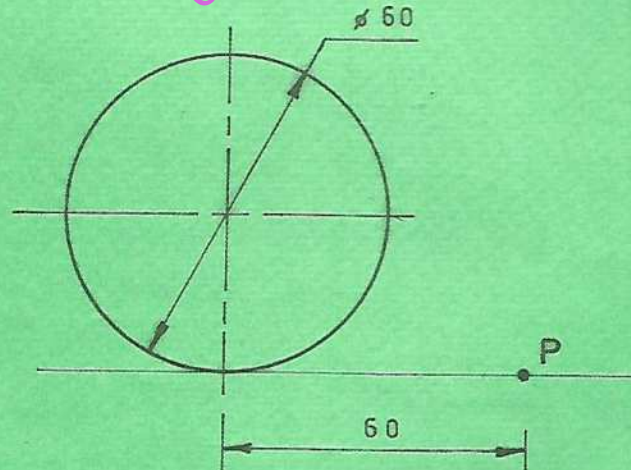


Fig. 8

Draw a tangent from point P to the circle.

(4 marks)

0101/214	0202/214	0305/214	5
0103/214	0301/214	0401/214	
0105/214	0302/214	0404/214	
0106/214	0304/214	0405/214	

Oct./Nov. 2021

Turn over

9. Figure 9 shows orthographic views of a hollow object.

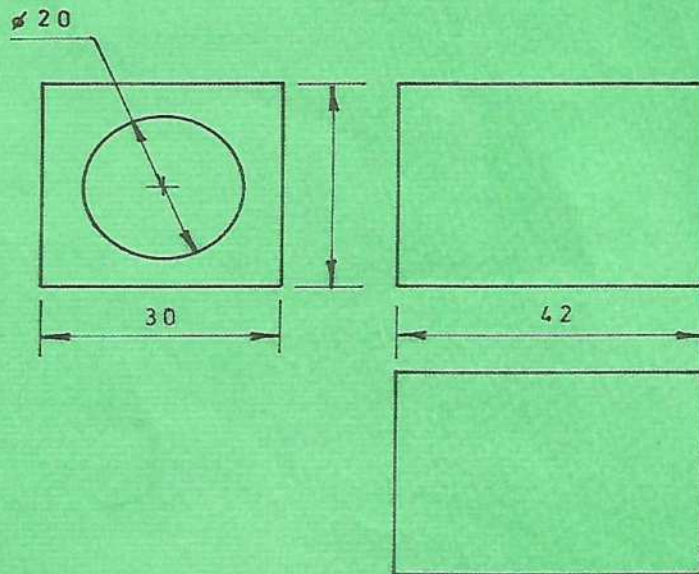


Fig. 9

Copy the views and insert the missing lines.

(2 marks)

10. Figure 10 shows a pictorial drawing of a block in isometric projection.

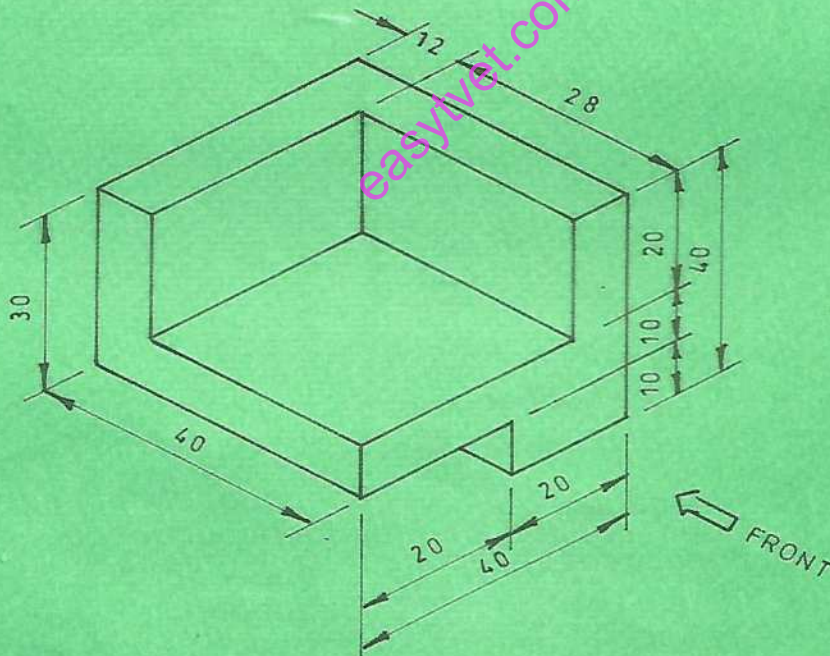


Fig. 10

Draw an oblique cabinet view of the block.

(4 marks)

0101/214	0202/214	0305/214	6
0103/214	0301/214	0401/214	
0105/214	0302/214	0404/214	
0106/214	0304/214	0405/214	







13. (a) Figure 13 shows a support footing with a through rectangular hole and a chase on the bottom.

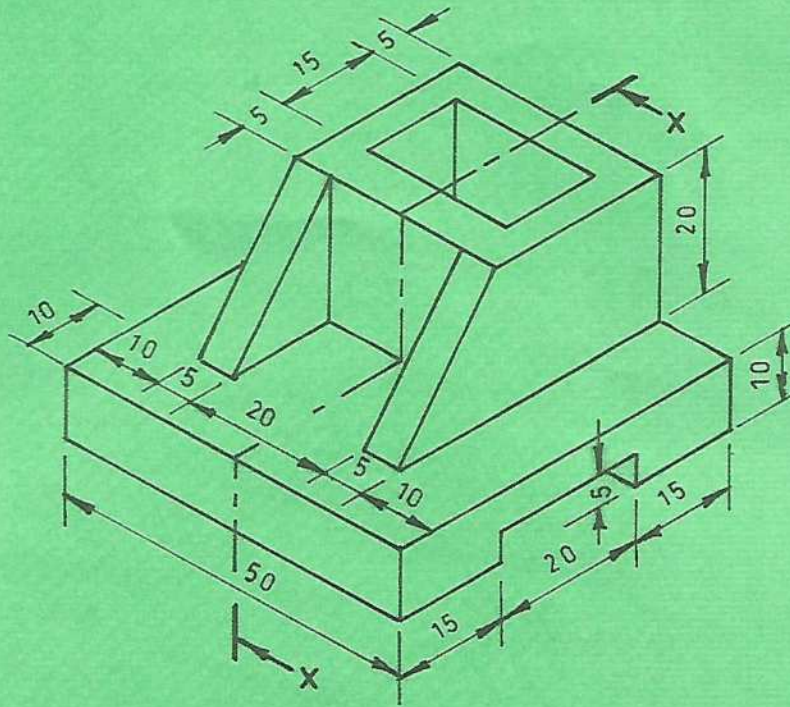


Fig. 13

Draw a sectional elevation through X-X.

(12 marks)

- (b) Figure 14 shows a circle of diameter 70 mm.

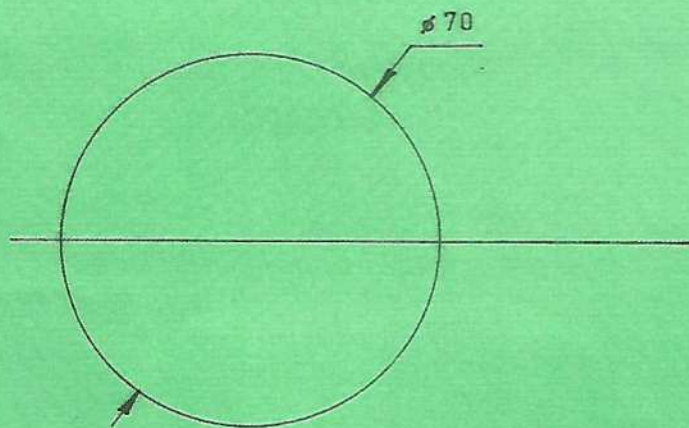


Fig.14

Draw a heptagon on the circle using intersecting arcs method.

(18 marks)

0101/214	0202/214	0305/214
0103/214	0301/214	0401/214
0105/214	0302/214	0404/214
0106/214	0304/214	0405/214

SECTION C (30 marks)

Answer any **TWO** questions from this section.

14. (a) Sketch a long nose pliers. (5 marks)

(b) Figure 15 shows a link mechanism with crank OA which rotates about centre O. Crank BC is connected to OA by link AB and oscillates about C.

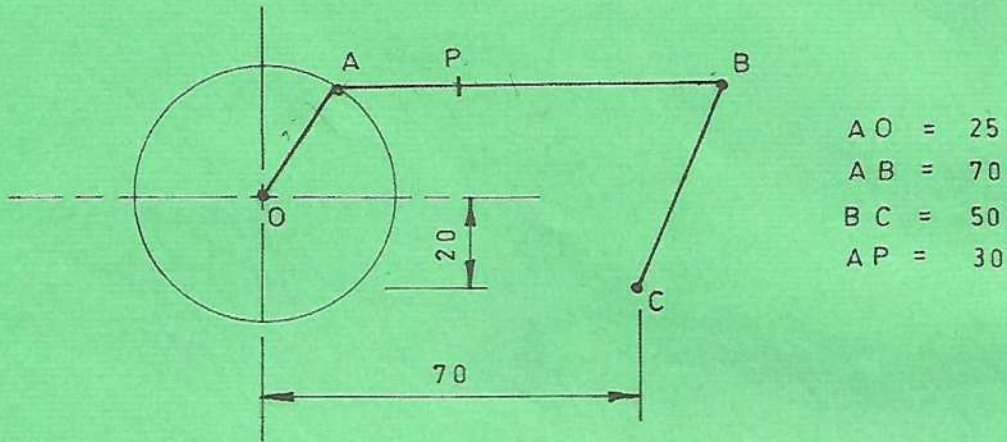


Fig.15

Draw the locus of point P as OA makes a complete revolution. (10 marks)

15. Figure 16 shows a machine casting.

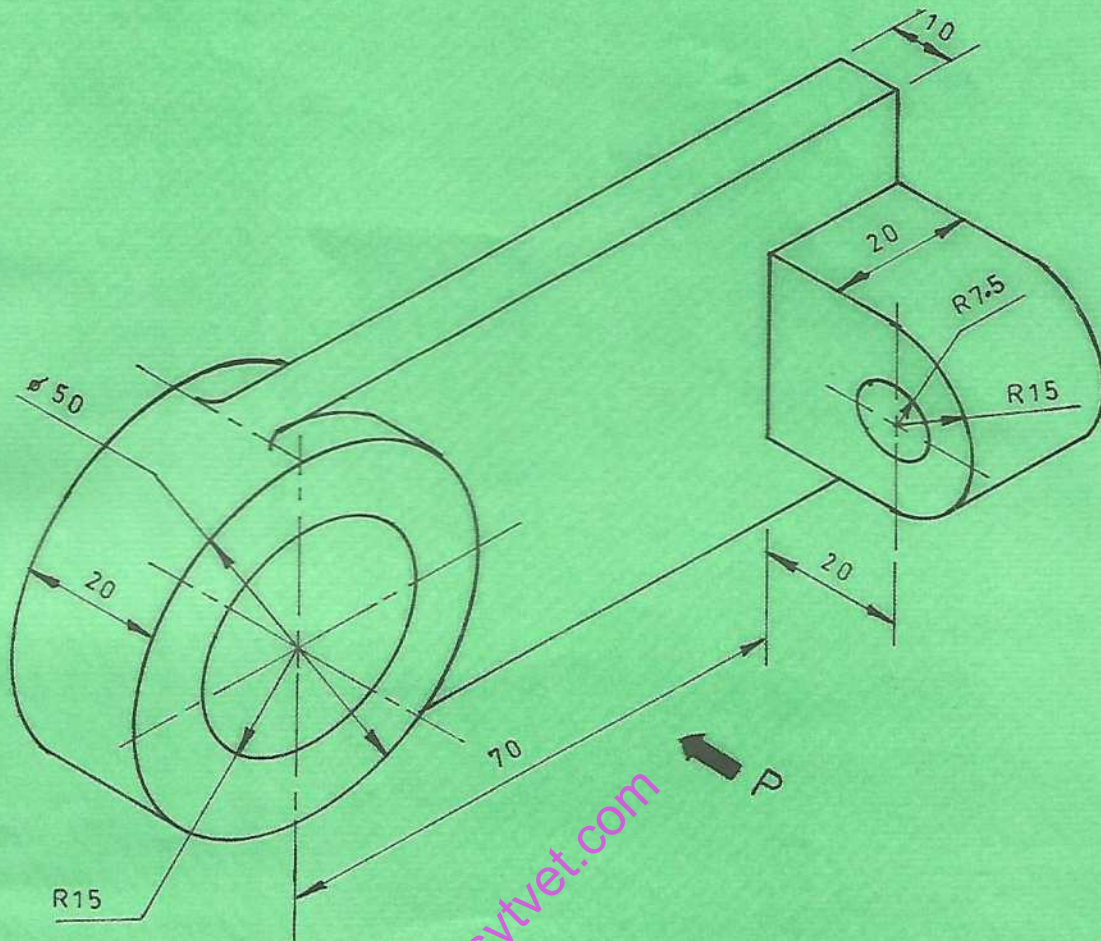


Fig.16

Draw the following views, full scale, in 3<sup>rd</sup> angle orthographic projection:

- (a) front elevation in the direction of arrow P;
- (b) end elevation;
- (c) plan.

0101/214

0202/214

0305/214

11

Turn over

0103/214

0301/214

0401/214

0105/214

0302/214

0404/214

0106/214

0304/214

0405/214

Oct./Nov. 2021

16. Make free hand sketches and label any **three** of the following tools:

- (a) mallet;
- (b) awl;
- (c) ball pein hammer;
- (d) cold chisel;
- (e) tracing wheel.

(15 marks)

THIS IS THE LAST PRINTED PAGE.

easyvet.com

0101/214	0202/214	0305/214	12
0103/214	0301/214	0401/214	
0105/214	0302/214	0404/214	
0106/214	0304/214	0405/214	

Oct./Nov. 2021