

(iv) Find the remaining volume of metal in cubic centimetres when the cylinders given in above (iii) are made.

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(20 marks)

13. Customs duty of 14% has to be paid when a certain item is imported. The value of the item without the duty is 8 000 rupees.

(i) How much is the customs duty in rupees?

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(ii) If the vendor who imported this item marks its selling price as 10 944 rupees, what is the profit percentage he expected to be earned?

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(iii) If a discount of $3\frac{1}{3}\%$ is given from the marked price when the item is sold for cash, how much is the discount in rupees?

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(iv) What is the vendor's profit in rupees, if he sold the item with the above discount?

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(20 marks)

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Open Competitive Examination for Recruitment to the Posts of Inspector of Customs, Grade II of Sri Lanka Customs Department - 2017 (2018)

(02) Mathematics

One hour

Instructions to Candidates

Important :

- * This paper consists of 13 questions on 06 pages.
- * Before answering the paper arrange all the pages in order.
- * Answer all questions on this paper itself. Use the space provided under each question to work and write the answer clearly.
- * The time allowed is one hour.
- * Commence answering only after the Centre Supervisor's announcement.
- * Calculators should not be used.
- * Instructions given should be strictly followed in answering this paper and marks will not be awarded for answers not in accordance with these instructions.
- * Even if you are not attempting the paper hand it over to the Supervisor.
- * Write the answers clearly and legibly in blue or black ink only and not in pencil.
- * It is an offence to remove this paper from the examination hall or turn out photocopies of the same.
- * Answer scripts with illegible figures, illegible handwriting, written with a pencil, those where erasing fluid has been used and will not be marked/evaluated.

Write your Index Number here and on page 3 in the spaces indicated.

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 Checked as correct

Invigilator's Initials

For Examiner's use only

Part	Question No.	Marks Awarded
I	1 - 10	
	11	
II	12	
	13	
Total		

Final Score

In figures: _____
 In words: _____
 Marking Examiner: _____
 Checked by: _____

Part I

1. Simplify: $\left(\frac{1}{3} - 2\frac{2}{5}\right) + 1\frac{7}{10}$

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2. Solve: $2x - 3(6x - 4) + 20 = 0$

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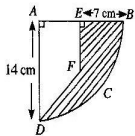
3. Find the factors of the following expressions:

(i) $x^2 - 2x - 24$

(ii) $3x^2y - 27y^3$

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4. In the given figure, $ABCD$ is a sector of a circle and ABD is a triangle. Find the area of the shaded region. (Use $\frac{22}{7}$ for the value of π .)



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5. The sum of the first two terms of an arithmetic progression is 11. The third term is 1. Find the first term and the common difference of this progression.

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(iii) If the number of customers who bought only chick peas is 7, how many bought both chick peas and rice?

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(iv) How many bought only rice?

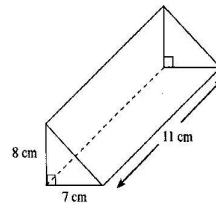
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(v) How many bought at least two of these items out of these three items?

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(20 marks)

12. The cross section of a solid right prism made of metal takes the shape of a right angled triangle. The two sides that include the right angle are of length 8 cm and 7 cm.



(The volume of a solid right circular cylinder of radius r and height h is $\pi r^2 h$. Use $\frac{22}{7}$ for the value of π .)

(i) Find the area of the cross section of the prism in square centimetres.

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(ii) If the length of the prism is 11 cm, find its volume in cubic centimetres.

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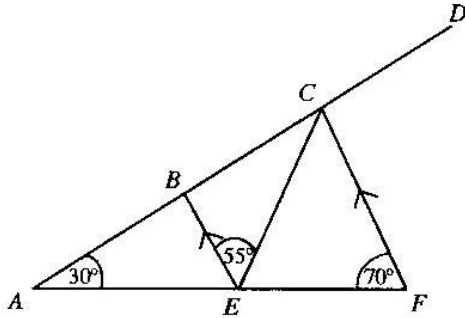
(iii) What is the maximum number of solid right circular cylinders of radius 3.5 cm and height 1.5 cm can be made with the metal obtained by heating the prism?

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6. In the given figure, $ABCD$ and AEF are straight lines and $EB \parallel FC$.

Moreover, $\hat{BAE} = 30^\circ$, $\hat{BEC} = 55^\circ$ and $\hat{CFE} = 70^\circ$. Find the magnitude of each angle given below.

- (1) \hat{BEF} (2) \hat{FCD} (3) \hat{ABE} (4) \hat{BCE}



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7. Of the spectators at a cricket match, $\frac{4}{7}$ were seated and the rest 1 500 were standing.

(i) How many spectators were seated?

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(ii) If the number of female spectators was 1 250, write the ratio of the female spectators to the male spectators in its simplest form.

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8. The mean of the masses of 6 children is 34 kg. The mean of the masses of another 3 children is 37 kg. Find the mean of the masses of these 9 children.

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9. Write the equation of the straight line that passes through the points (0, 4) and (2, -2) in the form of $y = mx + c$.

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10. A person who took a loan of 12 000 rupees at a simple interest rate, settled the loan in 6 months by paying 12 900 rupees.

(i) What is the annual simple interest rate charged?

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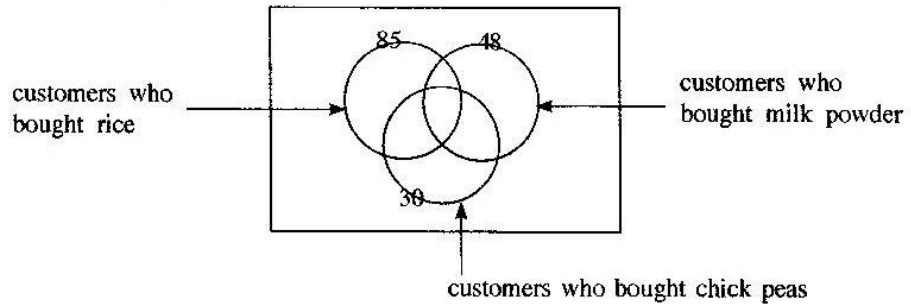
(ii) If this loan amount is taken for two years at the above annual simple interest rate, what is the total interest that has to be paid at the end of the two years?

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(04 × 10 = 40 marks)

Part II

11. Information gathered on the customers who came to a certain store on a certain day and the items bought by them are shown in the given Venn diagram. According to the information, 85 of them bought rice, 30 bought chick peas and 48 bought milk powder.



(i) If the number of customers who bought both rice and milk powder is 30, how many bought rice or milk powder?

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(ii) The number of customers who bought all these three types of items is 12. The number of customers who bought both milk powder and chick peas is 15. How many bought only milk powder?

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[See page five.]

1. Write TRUE or FALSE in the space provided based on the information in the text.

- (i) Well-trained communication skills help a Customs Inspector get out of a tensioned situation successfully.
- (ii) In most situations, when put face to face with hostility, one should react in kind.
- (iii) It is more important to show an understanding of your partners' grievances than to try to solve them.
- (iv) Empathy means relating to the others' problems.
- (v) Asking for permission helps to increase your partner's sense of being in control of the situation.
- (vi) It is important to let the other party relieve their tension before you go on with your transaction.

(06 marks)

2. Write answers to the following questions.

- (i) The writer indicates four simple steps; 'Inquire', 'Empathize', 'Ask permission' and 'Explain and Offer choices'. In which of these steps does the writer recommend to communicate personal experience of the communicator with the person who is angry?
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- (ii) What does the bold typed word 'this' in the second paragraph mean?
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- (iii) What does the writer mean in his expression 'defuse the bomb'?
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- (iv) What does the writer mean that the model he proposes does not move on a 'linear fashion'? Briefly explain using your own words.
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- (v) In the text, writer gives his personal definition of anger. Write it.
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(10 marks)

3. Write a word, selecting from the passage, which means the same as each of the following:

- (i) speak to show somebody sympathy when they are upset
- (ii) a situation in which people are involved in a serious disagreement
- (iii) remaining at the end of a process
- (iv) something that you think is unfair and that you protest about

(04 marks)

[See page three.

Customs officer : And what's the purpose of your visit, madam?

Lady : 4.

Customs officer : I see. Well then, you understand that you've come into the Green Channel, which means you have nothing to declare?

Lady : 5.

Customs officer : Is this all your baggage?

Lady : 6.

Customs officer : Is anybody else traveling with you, madam?

Lady : 7.

Customs officer : OK then. What type of goods have you got; cigarettes, cigars...?

Lady : 8.

Customs officer : Nothing else at all in the tobacco line?

Lady : 9.

Customs officer : Any drinks at all? Spirits? Liquors? Wine?

Lady : 10.

Customs officer: Were those bottles purchased in the duty-free shop, or ..?

Lady : 11.

Customs officer : I see. Are you bringing any gifts for anybody in Sri Lanka?

Lady : 12.

Customs officer : Any other valuable items-jewellery, laptop?

Lady : 13.

Customs officer : OK. Thank you, madam. Would you let me have a look in there ... Is the laptop going back to India with you?

Lady : 14.

Customs officer : 15.

Lady : No, I don't.

Customs officer : That's fine. Thank you very much. Have a pleasant stay!

(15 marks)

Test 6

● Write an essay on the following topic. Use about 200 words.

The Drug Menace in Sri Lanka.

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[See page eight.

- 6. The two candidates are **much of a muchness**.
(1) very similar (2) very dissimilar (3) very attractive (4) very old
- 7. He owns a surprisingly **roomy** car.
(1) less spacious (2) spacious (3) comfortable (4) attractive
- 8. The cows are allowed to **roam** freely on this land.
(1) enter (2) find food (3) enjoy (4) wander
- 9. Our journey soon became **tedious**.
(1) interesting (2) pleasurable (3) boring (4) regrettable
- 10. The **autopsy** on the child revealed that she had been poisoned.
(1) death (2) investigation (3) post-mortem (4) report

(10 marks)

Test 5

Given below is a conversation between a Customs Officer and a lady. Fill in the gaps in the conversation by selecting most appropriate utterance in each blank from those given in the box. Write the appropriate utterance in each blank. Use one utterance only once. There is one extra utterance.

Utterances

- 1. Well, the wine is a present, but that's all.
- 2. No, I don't use them.
- 3. No
- 4. Yes, of course. It's my working tool.
- 5. Do you live in Sri Lanka?
- 6. No, I have never brought.
- 7. For 5 days
- 8. Just two bottles of red wine.
- 9. Yes, that's all.
- 10. Yes, at New Delhi Airport.
- 11. Do you have a camera?
- 12. No, just my personal things.
- 13. Yes, I do.
- 14. No, I'm traveling alone.
- 15. I'm here on business.

Customs officer : Would you mind putting your baggage on here, please madam? Where are you travelling from?

Lady : From New Delhi.

Customs officer : New Delhi. Are you a resident in India, or I.....

Lady : 2.

Customs officer : Can I see your passport please? OK. Thank you. How long are you staying in Sri Lanka?

Lady : 3.

[See page seven.

Test 2

Summarize the following text in your own words. Use about 175 words. Indicate the exact number of words you have used at the end of your summary.

A patent is an exclusive right to use an invention for a certain period of time, which is given to an inventor as compensation for disclosure of an invention. Although it would be beneficial for the world economy to have uniform patent laws, each country has its own laws designed to protect domestic inventions and safeguard technology. Despite widespread variation, patent laws generally fall under one of two principles: the first-to-file and first-to-invent. The first-to-file principle awards a patent to the person or institution that applies for a patent first while the first-to-invent principle grants the patent to the person or institution that was first to invent and can prove it. Most countries have adopted the first-to-file system. However, the United States maintains a first-to-invent system, despite obvious shortcomings. A result of countries employing different patent law principles is inconsistent of patent ownership.

Patent ownership is not recognized globally. On the contrary, ownership may change depending on the country. It is not uncommon for an invention to have two patent owners-one in the United States and one in the rest of the world. This unclear ownership often has economic consequences. If a company is interested in using a patented invention, it may be unable to receive permission from both patent owners, which in turn may prevent manufacture of a particular product. Even if permission is received from both owners, pay royalties to both may be quite costly. In this case, if the invention is useful enough, a company may proceed and pass on the added cost to consumers.

International economic tension has also been increasing as a result of differing policies. Many foreign individuals and companies believe that they are at a serious disadvantage in the United States with regard to patent ownership because of the logistical difficulties in establishing first-to-invent status. Further, failure of the United States to recognize patent ownership in other countries is in violation of the Paris Conventions on Industrial Properties, which requires all member nations to treat all patents equally. The conflict surrounding patents has promoted the World Intellectual Properties Organization (WIPO) to lobby for universality in patent laws. WIPO maintains that the first necessary step involves compelling the United States to re-examine its patent principle, taking into account the reality of a global economy. This push may indeed result in more global economic cooperation.

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[See page four.

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[20 marks]

Test 3

- Complete the following text by underlining the most appropriate word from those given within brackets.

For communication to work and get the response or reaction that you want, the receiver must understand the message that the sender is sending. To make this possible, the message should be: Clear, Simple, Accurate, Complete and Relevant.

This sounds easy enough to do but there are quite a few of those little gremlins that get in the way of (1) (efficient/effective/effectual/professional) communication.

[See page five.]

Attitude: Your response to the request, "would you be able to say this afternoon and help in the office?" would be very different if the (2) (demand/request/memo/message) was given by a sender you liked and wanted to impress than it would be if the same message was given by a sender you (3) (disliked/hated/detested/disapproved). The communication from the sender you want to make a good (4) (impact/effect/influence/impression) on would have got the desired result, you would have helped in the office. The sender that you have a bad (5) (feeling/attitude/inclination/dislike) towards would be doing the work himself.

Timing: Moreover, teenagers are experts (6) (in/at/about/on) timing! Don't you just know the right time to ask your father for some money you need? Even if your communication is clear, simple, accurate, relevant and complete, you know that it won't be effective (get the money) if you ask when the receiver (your father) is in a bad (7) (state/sympathy/disposition/mood), has just come home from a hectic day, has just seen your report or messy bedroom.

Tone: The "Oh, go away" that you laughingly say to your friend who is teasing you is communicating a very different message to the "Oh, go away" that you say to your (8) (frustrating/irritating/vexing/disturbing) little brother when he asks if he could borrow fifty rupees. Same message but very different tones that convey very different meanings!

Purpose: Communication is done usually to remind, reprimand, persuade, request, encourage or inform. Your reaction to any message would depend (9) (upon/by/onto/on) the purpose of it, what the sender was trying to (10) (make/get/persuade/convince) you, the receiver, to do.

Capability: It is equally important for the receiver to understand the message, given in the right tone, at the right time for the right purpose, but useless if the desired result is beyond his/her capabilities.

[10 marks]

Test 4

- In each of the following questions, underline the word/phrase which is closest in meaning to the word/phrase bold typed in the given sentence.

 1. He **defests** state sector employment.
 (1) approves (2) is fond of (3) loathes (4) demands
 2. The entire discussion revolved around a **moot point**.
 (1) an unrelated issue (2) an important point
 (3) a controversial issue (4) a non-controversial issue
 3. The **bare bones** of the conversation had been the weakness of the Management.
 (1) the detailed analysis (2) the main point
 (3) the naked truth (4) irrelevant facts
 4. The company has **locked horns** with the unions over proposed salary scheme.
 (1) get involved in a disagreement (2) agreed completely
 (3) started discussions (4) negotiated
 5. The land was **parcelled out** into small slots.
 (1) divided (2) donated (3) estimated (4) identified

[See page six.]