

TED (15) - 1001

Reg. No. ....

(REVISION - 2015)

Signature .....

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019**

**ENGLISH FOR COMMUNICATION - I**

[Time : 3 hours

(Maximum marks : 100)

**PART — A**

(Maximum marks : 10)

Marks

- I Read the following excerpts and answer the questions that follow:
1. "Coming here today, I have no hidden agenda."
    - (a) Identify the speaker. 1
    - (b) Which place is mentioned as 'here' ? 2
    - (c) Explain the context. 4
  
  2. "I'm the sheriff, if that's what you mean, so spit it out. What's your trouble ?"
    - (a) Who speaks these words ? 1
    - (b) To whom are these words addressed ? 2
    - (c) State the context. 4
  
  3. When I finally got up to leave, we both knew that a real friendship had been formed.
    - (a) Who is the speaker ? 1
    - (b) Comment on the "real friendship" mentioned here. 2
    - (c) Describe the context. 4
  
  4. As has been said, there was an excellent editorial against corporal punishment in that morning's issue, and no doubt it had its effect.
    - (a) Which is the "morning issue" referred to here ? 1
    - (b) What did the "excellent editorial" deal with ? 2
    - (c) Recall the context. 4



## PART — B

- II 1. Fill up using the appropriate words given in brackets :
- (a) Jewellers ..... gold to test its purity.  
(essay, assay, empathy)
- (b) Crossword puzzles are really .....  
(ingenious, ingenuous, illegitimate)
- (c) In ....., athletes use a blunt sword to hit an opponent.  
(Archery, Fencing, Javelin)
- (d) If pollution is not controlled, we will fast be heading to a final .....  
(contamination, configuration, catastrophe)
- (e) Sachin Tendulkar is a ..... in the history of world cricket.  
(native, stalwart, alien) (5 × 1 = 5)
2. Read the following sentences and find out the meaning of the words in bold letters from the context.
- (a) The Polar Bear is listed as a **threatened** species.  
(endangered, encrypted, engendered)
- (b) John lives in a **secluded** village away from the town.  
(amiable, isolated, rickety)
- (c) He has a lean muscular frame, and a strikingly handsome **shaped** face.  
(silhouetted, chiseled, secluded)
- (d) The old lady has a **tired** look on her face.  
(haggard, corporal, jerk) (4 × 1 = 4)
3. Correct the errors in collocation and rewrite the sentences.
- (a) Don't pass an appointment with the doctor.
- (b) The patient gave a visit to the doctor. (2 × 1 = 2)
4. (a) Write down a synonym of the word given in bold letters.  
Contaminated water is **hazardous** to aquatic life.
- (b) Write the antonym of the word given in bold letters.  
He is a **veteran** football player. (2 × 1 = 2)
- III 1. Rewrite the passage correcting the errors given in bold letters.
- Mr. Smith is **the** student of **a** Cambridge University. He is brilliant, and has only **a little** friends. But **these** friends are helpful. (4 × 1 = 4)



2. Fill up the blanks choosing the right words from the help box given.

Kathakali is a ..... (popular, clever) art form of Kerala. (The, A) ..... artists have to put in a lot of ..... (hard, hardly) work to perform on stage. Lack of training ..... (affects, effects) their performance. It is noted for its use of ..... (elegant, wrinkled) costume. (5 × 1 = 5)

3. Describe the following picture in a paragraph. (60 words)



5

4. Rewrite the following passage correcting the errors.

In the preliminary round of the spelling test held yesterday, Asha **perform** well. She **like** to go for shopping with her mother. Therefore, she hopes that her mother **buy** a present for her. At present, she **was** concentrating on the finals. **It is** held next Sunday. 5

5. Given below are three notices. Write down what they mean.

RESTRICTED AREA

SOUND HORN

DO NOT SPIT HERE

3

### PART — C

- IV Write down two points in agreement and two points in disagreement with the topic for group discussion.

Keeping Animals in Zoo

4

- V Read the details of Mr. Sachin Dutt.

Name	: Sachin Dutt
Lives in	: New Delhi
Education	: Completed his B.Tech in Computer Science & Engineering
Additional Qualification	: Certificate Course in SAS
Strengths	: Hardworking, Innovative, Punctual and Dedicated
Achievements	: Secretary (Computer Association)
Hobbies	: Reading, Drawing

Imagine that you are Sachin Dutt and are going for an interview. How would you introduce yourself? Prepare a self introduction. 5



- VI Prepare a cover letter in response to the advertisement given below in *The Hindu* of June 20, 2016.

Technocraft Online Solutions is a leading Software Developer. We are looking for smart, young and experienced people for the post of Marketing Executives. Candidates must be aged between 20-30 with Degree/Diploma in any discipline, and should have good communication skills and pleasant manners. Apply within 10 days to the HR Manager, Technocraft Online Solutions, Hyderabad.

5

- VII Complete the telephone conversation as directed.

Neetha : Hallo ..... (wants to speak to Smitha)  
 Smitha : Hai Neetha, What's up ?  
 Neetha : ..... (asks if she can come home tomorrow evening for her brother's birthday celebration)  
 Smitha : ..... (politely refuses request)  
 Neetha : Oh ! ..... (feels sorry)  
 Smitha : ..... (Expresses thanks for the invitation)

5

- VIII Write a paragraph on any *one* of the following :

(a) Environmental Pollution

OR

(b) Importance of Education

6

- IX (a) Your friend has received an Overseas Scholarship. Congratulate him on his achievement. Construct a Conversation. There should be a minimum of six exchanges.

OR

(b) The CEO of Compco World Pvt. Ltd. has decided to issue a memo to all the employees of the Data Processing Wing seeking their suggestions on a new computer network software proposed to be installed by the company. Prepare the memo.

6

- X Amar wants to present a paper on **Climate Change and Indian Agriculture** in an International Seminar. Prepare three slides based on the information given below.

Climate change is any significant long-term change in the expected patterns of average weather of a region over a significant period of time. In recent times, the rate of climate change is at a much faster pace on account of emission of greenhouse gases caused by industrialisation, urbanisation, deforestation etc. India's agriculture has been dependent on monsoon. But the changes in monsoon trends along with increase in temperature levels severely affect Indian agriculture. The major impact of climate change is on rain fed or un-irrigated crops which are cultivated on nearly 60 percent of cropland. Increased droughts and floods are likely to affect the productivity rate of most crops. Immense variations in temperature also result in a drastic decrease in the production of crop yields. Any change in the climatic parameters will have a direct impact on the quantity of food produced and this will ultimately affect the food security of the country. Coping with the impact of climate change on agriculture will require careful management of resources like soil, water and biodiversity.

6



DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

ENGINEERING MATHEMATICS - I

[Time : 3 hours]

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions. Each question carries 2 marks.

1. Prove that  $\cos^2 A - \sin^2 A = 2 \cos^2 A - 1$ .
2. Write the expression for  $\sin 3A$ .
3. Prove that in any triangle ABC,  $abc = 4R\Delta$ .
4. If  $y = x \sin x$ , Find  $\frac{dy}{dx}$
5. Find the velocity and acceleration at time 't' of a particle moving according to  $s = 2t^3 - 3t^2 + 1$ .

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Express  $4 \cos x + 3 \sin x$  in the form  $R \sin(x + \alpha)$  where  $\alpha$  is acute.
2. Prove that  $\sin 10^\circ \sin 50^\circ \sin 70^\circ = \frac{1}{8}$ .
3. Prove that  $(a - b) \cos \frac{C}{2} = c \sin \frac{A-B}{2}$ .
4. Differentiate  $\sin x$  by the method of first principles.
5. Find  $\frac{dy}{dx}$  if  $(x^2 + y^2)^2 = xy$ .
6. Find the equation to the tangent and normal to the curve  $y = 3x^2 + x - 2$  at (1, 2).
7. Prove that  $\sin A + \sin(120^\circ + A) + \sin(240^\circ + A) = 0$ .

(5×6 = 30)



## PART — C

Marks

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

## UNIT — I

- III (a) Prove that  $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2 \operatorname{cosec} \theta$ . 5
- (b) If  $\theta$  is acute and  $\sin \theta = 0.4$ , find the value of  $\sec \theta + \tan \theta$ . 5
- (c) If  $A + B = 45^\circ$ , show that  $(1 + \tan A)(1 + \tan B) = 2$ . 5

OR

- IV (a) Prove that  $\frac{1+\cos\theta}{\sin\theta} = \frac{\sin\theta}{1-\cos\theta}$ . 5
- (b) If  $\sin A = \frac{4}{5}$ ,  $\sin B = \frac{12}{13}$ ;  $A, B$  are acute, find  $\sin(A+B)$  and  $\cos(A-B)$ . 5
- (c) The horizontal distance between two towers is 60m and the angle of depression of the first tower as seen from the second which is in 150m height is  $30^\circ$ . 5  
Find the height of the first tower.

## UNIT — II

- V (a) Prove that  $\frac{\sin 3A}{\sin A} - \frac{\cos 3A}{\cos A} = 2$ . 5
- (b) Prove that  $\tan A + \cot A = 2 \operatorname{cosec} 2A$ . 5
- (c) Show that  $\frac{\sin 2A}{1+\cos 2A} = \tan A$  and deduce the value of  $\tan 15^\circ$ . 5

OR

- VI (a) Prove that  $\frac{\sin A + \sin 3A + \sin 5A}{\cos A + \cos 3A + \cos 5A} = \tan 3A$ . 5
- (b) Prove that  $\sin A + \sin 3A + \sin 5A + \sin 7A = 4 \cos A \cos 2A \sin 4A$ . 5
- (c) Solve  $\Delta ABC$ , given  $a = 4\text{cm}$ ,  $b = 5\text{cm}$  and  $c = 7\text{cm}$ . 5

## UNIT — III

- VII (a) Evaluate  $\lim_{x \rightarrow 4} \frac{x^4 - 256}{x^3 - 64}$ . 5
- (b) If  $x = a(\theta - \sin \theta)$ ;  $y = a(1 - \cos \theta)$ , show that  $\frac{dy}{dx} = \cot \frac{\theta}{2}$ . 5
- (c) If  $y = A \cos px + B \sin px$ , ( $A, B, p$  are constants), Show that  $\frac{d^2y}{dx^2}$  is proportional to  $y$ . 5

OR

- VIII (a) Evaluate (i)  $\lim_{x \rightarrow 0} \frac{1 - \cos 2x}{x^2}$  (ii)  $\lim_{x \rightarrow -1} \frac{x^3 + 1}{x + 1}$  (3+3=6)
- (b) Find  $\frac{dy}{dx}$  if  $y = (x^2 + x + 1)^7 \sin^2 x$ . 4
- (c) If  $y = Ae^{nx} + Be^{-nx}$  (A, B are constants), Show that  $\frac{d^2y}{dx^2} - n^2y = 0$ . 5

## UNIT — IV

- IX (a) A particle is projected vertically upwards and its height 'h' and time 't' are connected by  $h = 60t - t^2$ . Find the greatest height attained. 5
- (b) A balloon is spherical in shape. Gas is escaping from it at the rate of 10cc/sec. How fast is the surface area shrinking when the radius is 15cm. 5
- (c) The deflection of a beam is  $S = 2x^3 - 9x^2 + 12x$ . Find the maximum deflection. 5

OR

- X (a) Find the velocity and acceleration of a particle at  $t = 3$  seconds whose displacement is given by  $S = 3t^3 - t^2 + 9t + 1$ . 5
- (b) A spherical balloon is inflated by pumping 25cc of gas per second. Find the rate at which the radius of the balloon is increasing when the radius is 15cm. 5
- (c) Find the maximum value of  $2x^3 - 3x^2 - 36x + 10$ . 5
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

**ENGINEERING CHEMISTRY - I**

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is hard water ? Give the reason for hardness.
2. Give any two physical properties of water.
3. What is the role of Platinum in contact process for the manufacture of  $H_2SO_4$  ?
4. Human Blood has a constant  $p^H$  of 7.4. How is this maintained ?
5. What is alloy ? Why is Carbon added to Iron in the manufacturing of steel ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain the important features of solid catalyst with suitable examples.
2. What is bronsted theory of acids and bases ? Write the conjugate pair of the following.
 

(a) HCl	(b) $HNO_3$
(c) $NH_3$	(d) $CH_3COO^-$
3. Write any three important applications of  $p^H$ . Calculate the  $p^H$  of 0.01M  $H_2SO_4$ .
4. What is CNT ? Write its important properties.
5. (a) What are the disadvantages of using hard water in boiler ?  
(b) What is sterilisation of water ? Mention any two methods.
6. Explain fusion method for the preparation of Brass. Give the composition of Brass.
7. Write the physical properties of metals.

(5×6 = 30)



## PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

## UNIT — I

- III (a) Distinguish between atom and molecule. 5  
 (b) Give any 4 applications of nanomaterial. 4  
 (c) What are catalytic promoter and catalytic poison ? Give 2 examples each. 6

OR

- IV (a) Give the applications of CNT. 5  
 (b) Explain any two methods of preparation of CNT. 4  
 (c) What is homogeneous and heterogeneous catalysis ? Give 2 examples. 6

## UNIT — II

- V (a) What is neutralisation ? Explain on the basis of Arrhenius theory and Lewis theory. 5  
 (b) What is ionic product of water ? Give its mathematical statement and value at 25°C. 4  
 (c) Calculate the Normality and Molarity of  
 (i)  $\text{H}_2\text{SO}_4$  solution containing 4.9 gm of acid in 500ml.  
 (At wt of S - 32, H - 1, O - 16)  
 (ii)  $\text{Na}_2\text{CO}_3$  solution containing 5.3gm of base in 500ml.  
 (At wt of Na - 23, C-12, O-16) 6

OR

- VI (a) What is a buffer solution ? How is it classified, give examples. 5  
 (b) Calculate the pH of (i) 0.01 M HCl  
 (ii) 0.01 M NaOH 4  
 (c) What are indicator ? Suggest a suitable indicator for the titration of  
 (i)  $\text{HCl} \times \text{Na}_2\text{CO}_3$  (ii)  $\text{CH}_3\text{COOH} \times \text{NaOH}$ . Justify your answer. 6

## UNIT — III

- VII (a) Explain Ion Exchange method for removal of permanent hardness of water. 5  
 (b) What are the advantages of reverse osmosis in desalination of water ? 4  
 (c) What is potable water ? What are the characteristics of potable water ? 6

OR



- VIII (a) What is desalination of water ? Explain desalination by reverse osmosis. 5
- (b) What is temporary hardness ? A solution of  $\text{Ca}(\text{HCO}_3)_2$  is boiled and the residue obtained is filtered off. Is the remaining solution soft water explain your answer. 4
- (c) Draw a flow chart and explain the process of making potable water. 6

## UNIT — IV

- IX (a) What are the purposes of making alloy ? 5
- (b) Give any two limitations and advantages of powder metallurgy. 4
- (c) Explain : (i) annealing (ii) Quenching (iii) Tempering and (iv) Nitriding.  
How does it affect the properties of steel ? 6

OR

- X (a) Impurities in steel changes the physical properties. Give the effect of the following elements in steel. 5
- (i) P      (ii) S      (iii) N      (iv) O      and      (v)  $\text{Mn}$
- (b) What are the uses of powder metallurgy ? 4
- (c) Explain powder metallurgy with the different steps involved. 6
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**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
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**ENGINEERING GRAPHICS**

[Time : 3 hours

(Maximum marks : 100)

- [Note : — 1. A2 size drawing sheet to be supplied.  
2. First angle projection to be followed.  
3. Dimensions should be as per BIS.  
4. Both sides of drawing sheet can be used.  
5. Sketches accompanied.]

**PART — A**

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Write any four elements of dimensioning.
2. What is an involute ?
3. Draw the symbol of first angle projection.
4. What do you meant by orthographic projection ?
5. Write the expansion of CADD.

(5×2= 10)

**PART — B**

(Maximum marks : 50)

(Answer any *five* of the following questions. Each question carries 10 marks.)

- II Redraw the given figure -1 to full size and dimension it as per BIS.
- III Draw a parabola of base 90 mm and axis 60 mm using tangent method.
- IV Construct a regular heptagon of side 30 mm.
- V Construct a plane scale of RF = 1:40 to show meters and decimetres and long enough to measure up to 5 meters. Mark on the scale a distance representing 4.3 meters.
- VI Draw projections of the following points on a common reference line.
  - (i) Point A is 30 mm in front of VP and 40 mm above HP.
  - (ii) Point B is 25 mm below HP and 50 mm behind VP.
  - (iii) Point C is in the VP and 30 mm above HP.



- (iv) Point D is 40mm below HP and 20 mm in front of VP.  
(v) Point E is in both HP and VP.
- VII Draw the projections of a square lamina of size 40 mm is inclined  $30^\circ$  to HP and perpendicular to VP.
- VIII Draw the development of a funnel shown in figure- 2.

(5×10= 50)

PART — C

(Maximum marks : 40)

(Answer any *two* of the following questions. Each full question carries 20 marks.)

- IX Isometric view of a shaft support is shown in figure - 3. Draw the front view in the direction of F, Top view and left side view.
- X Pictorial view of an object is shown in figure - 4. Draw the full sectional front view in the direction of F and top view.
- XI Orthographic views of an object are shown in figure - 5. Draw the isometric view of the object. (2×20= 40)
-



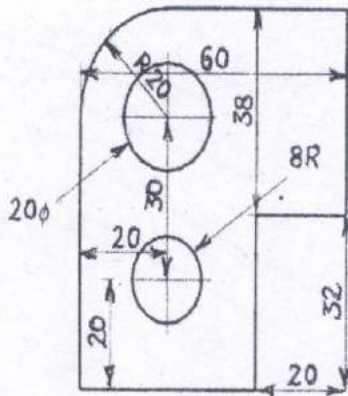


Fig-1

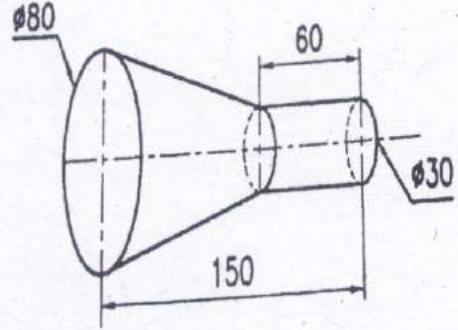


Fig - 2

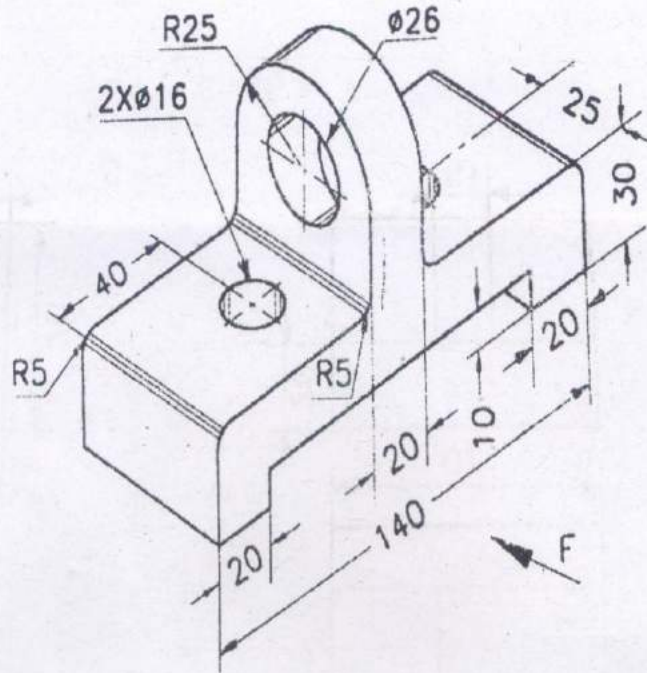


Fig (3)



(ii)

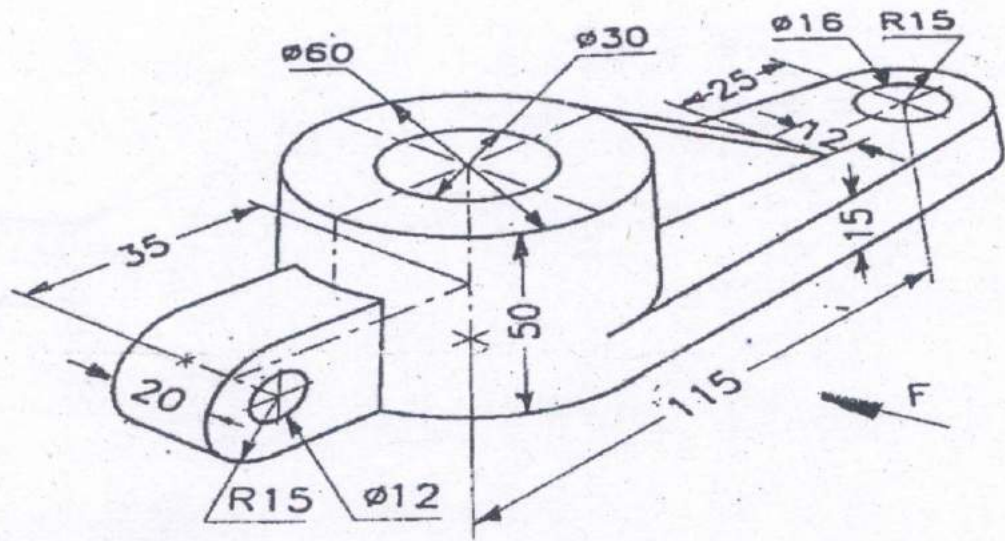


Fig - 4

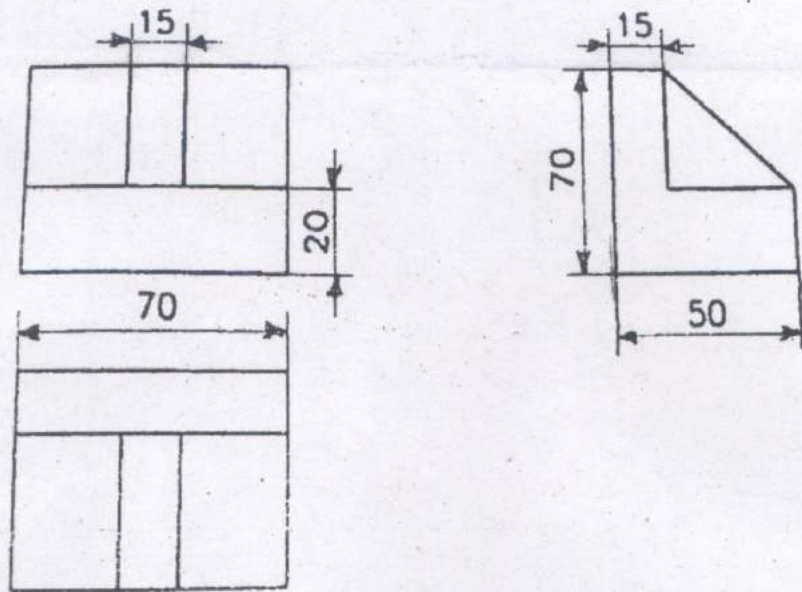


Fig - 5