C–0039

Sub. Code
11811T/11611T/
96311T/96411T/
96611T

U.G. DEGREE EXAMINATION, APRIL 2019

First Semester / First Year

Part I — Tamil

தமிழ்ச் செம்மொழியும் தமிழர்களின் பன்முகத் திறனும்

(Common for B.Sc. (Aero.Sci.)/B.Sc. (Astanga Yoga)/
B.Sc. (Nutri. Deiti.)/B.Sc. (Comp. Sci.)/B.Sc. (Nautical Sci.))

(2016 onwards)

Time : Three Hours Maximum : 75 Marks

பகுதி அ (10 × 2 = 20)

அனைத்து வினாக்களுக்கும் விடை தருக.

1. மொழி என்பதற்கான விளக்கம் தருக.

2. தமிழ்மொழியின் சிறப்புக்கள் இரண்டினைக் கூறுக.

3. ஒற்றை ஆடை விளக்குக.

4. பெண்கள் அணியும் ஆடைகள் யாவை?

5. கழல் என்றால் என்ன?

6. குடுமியான் மலை – குறிப்பு வரைக.

7. பாறை ஓவியம் என்பதனை வரையறை செய்க.

8. குழந்தைகள் அணியும் அணிகலன்கள் எவை?

9. ஐம்பெரும் பூதங்கள் எனப்படுபவை எவை?

10. பண்டமாற்று முறை என்றால் என்ன?

பகுதி ஆ $(5 \times 5 = 25)$

அனைத்து வினாக்களுக்கும் விடையளிக்க.

11. (அ) இந்தியச் செம்மொழிகள் பற்றி விவரிக்க.

(அல்லது)

(ஆ) தமிழின் தொன்மை பற்றி எழுதுக.

12. (அ) ஆடை வகைகள் குறித்து விளக்குக.

(அல்லது)

(ஆ) ஆண்களுக்குரிய ஆசைகள் பற்றி குறிப்பு வரைக.

13. (அ) கிண்கிணி என்பதன் சிறப்பினை விவரிக்க.

(அல்லது)

(ஆ) நவமணிகள் பற்றி விளக்குக.

14. (அ) இசையின் சிறப்பம்சங்களை எழுதுக.

(அல்லது)

(ஆ) நடனக் கலையின் தோற்றம் பற்றி உரைக்க.

15. (அ) இலக்கியங்களில் காணலாகும் வானியல் செய்திகளுக்கு இரு சான்று தருக.

(அல்லது)

(ஆ) தமிழர்களின் விருந்தோம்பல் சிறப்பினைத் தருக.

பகுதி இ $(3 \times 10 = 30)$

அனைத்து வினாக்களுக்கும் விரிவான விடையளி.

16. (அ) தமிழ்ச் செம்மொழி முயற்சி வளர்ச்சி பற்றி மதிப்பிடுக.

(அல்லது)

(ஆ) நூலாடை, பட்டாடை இவை குறித்து விளக்குக.

17. (அ) ஆசை வேலைப்பாடுகள் பற்றி வரைக.

(அல்லது)

(ஆ) பெண்களின் அணிகலன்கள் பற்றி புலப்படுத்துக.

18. (அ) சிற்பக் கலையின் தோற்றம் வளர்ச்சி பற்றி தெளிவுபடுத்துக.

(அல்லது)

(ஆ) பழந்தமிழர் வாணிபம் குறித்து நீவிர் அறிவன யாவை?

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C–0040

Sub. Code
11611F/11811F/ 96111F/96211F/ 91811F/97211F/ 91911F

U.G. DEGREE EXAMINATION, APRIL 2019

First Year/ First Semester

Part I — French

FRENCH

(2016/ 2018 onwards)

(Common for BBA (IB)/ B.Com. (BFS & I)/ B.Sc. (Aviation)/ B.Sc. (Aero.Sci./ B.Sc.(FD) /B.Sc.(ID)/ B.Sc.(Nautical Sci.))

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Translate in French :

   (a) Good Morning

   (b) Good Afternoon.

2. What is the name given for Alphabets in French?

3. Compléted les expressions :

   (a) B — n — — n — — t, mademoiselle.

   (b) B — — j — — r, m — — s — — — r.

4. La capitale de la France, c'est ...

   (The capital of France is}

   (a) Berlin

   (b) Lyon

   (c) Paris.

5. Le louvre est ...

   (louvre is a ...}

   (a) Une tour

   (b) Un musée

   (c) Un hôtel.

6. Le drapeau Français est ... (The French flag is ...)

   (a) orange, blanc, vert

   (b) vert, blanc, rouge

   (c) bleu, blanc, rouge.

7. Trouvez les réponses : (Write the answers for these questions)

   (a) Comment tu t'appelles ? ————————

   (b) Comment allez-vous ? ————————.

8. Dites les nombres. (tell the numbers)

   (a) les filles dans la classe ————————.

   (b) les garçons dans la classe ————————.

9. What is :

   (a) le drapeau indien ?

   (b) le drapeau français ?

10. Donnez le contraire. (Give the opposite) :

(a) Petit × ————————

(b) Joli × ————————.

Part B (5 × 5 = 25)

Answer **all** questions.

11. Recopiez les mots masculins et féminins :

(Recopy into masculine and feminine words)

(a) (i) une boutique ———————— ————————

(ii) un café ———————— ————————

(iii) un chocolat ———————— ————————

(iv) un cinéma ———————— ————————

(v) une créme ———————— ————————

Ou

(b) (i) un film ———————— ————————

(ii) un hôtel ———————— ————————

(iii) un menu ———————— ————————

(iv) un métro ———————— ————————

(v) un parfum ———————— ————————.

12. Complétez avec le verbe « étre »

(complete with the verb “etre”)

(a) (i) Je ———————— américain

(ii) Il ———————— indien

(iii) Tu ———————— Fraçais

(iv) Elle ———————— indienne

Ou

(b) (i) Nous ———————— italiens

(ii) Vous ———————— Français

(iii) Ils ———————— indiens

(iv) Elles ———————— françaises.

13. Écrivez les nombres en lettres.

(Write the given numbers in lettres)

(a) (i) 39

(ii) 46

(iii) 41

(iv) 64

(v) 25

Ou

(b) (i) 60

(ii) 62

(iii) 70

(iv) 53

(v) 58

14. Compléted les nombres avec “et” ou “—” :

(Complete the numbers with “et” or “—” :)

(a) (i) Vingt ———————— un

(ii) Vingt ———————— trois

(iii) trente ———————— un

(iv) trente ———————— quatre

(v) quarante ———————— un.

Ou

(b) (i) quarante ———————— deux

(ii) Cinquante ———————— neuf

(iii) Soixante ———————— un

(iv) Soixante ———————— huit

(v) Soixante ———————— dix

15. Complétez avec le verbe « avoir »

{Complete using the verb "avoir"}

(a) (i) J' ———————— un stylo

(ii) Tu ———————— des stylos

(iii) Il ———————— un livre

(iv) Elle ———————— dix ans.

Ou

(b) (i) Nous ———————— des cashiers

(ii) Vous ———————— une voiture

(iii) Ils ———————— un ballon

(iv) Elles ———————— une bicyclette.

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Décrivez votre mére en 5-6 lignes.

(Describe yout mother in 5-6 lines)

Or

(b) Décrivez votre Famille.

(Describe your Family).

17. (a) Écrivez les monbres en lettres.
(Write the given numbers in lettres)
(i) 5
(ii) 10
(iii) 15
(iv) 20
(v) 25
(vi) 30
(vii) 35
(viii) 40
(ix) 45
(x) 50

Or

(b) (i) 55
(ii) 60
(iii) 65
(iv) 70
(v) 75
(vi) 80
(vii) 85
(viii) 90
(ix) 95
(x) 100

18. (a) List out the Alphabets in French.

Or

(b) Write the Days in a Weak in French.

———————

C–0041

Sub. Code
11811H/96211H/ 96111H/97211H/ 11611H/91511H/ 91911H

U.G. DEGREE EXAMINATION, APRIL 2019

First Year/First Semester

Part I – Hindi

Hindi I – STORY, NOVEL, AND TRANSLATION

(2016/2018 onwards)

[(Common for B.B.A. (IB)/B.Com.(B.F.S &I)/ B.Sc.(Aviation)/B.Sc. (Nauti. Sci.)/ B.Sc.(Aero. Sci.)/ B.Sc. (ID)/ B.B.A. (A & AM)]

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

सभी प्रश्नों के उत्तर संक्षेप में लिखिए।

1. श्रीकंठ सिंह का संक्षिप्त परिचय दीजिए।

2. पंडित परमसुख का संक्षिप्त परिचय दीजिए।

3. सूबेदारनी ने लहनासिंह से क्या कहा था?

4. 'पाँच मिनट' कहानी में गोपाल ने प्रसन्न होकर अम्मा से क्या कहा?

5. कल्याणी के बच्चों का नाम लिखिए।

6. कृष्णा की शादी किससे हुई और क्यों?

7. रुक्मिणी का संक्षिप्त परिचय दीजिए।

8. मन्साराम की मृत्यु का जिम्मेदार कौन है और क्यों?

9. लिंग बदलिए :

(a) बकरा (b) माली

(c) मालिक (d) नौकर

10. वचन बदलिए :

(a) आँख (b) बहू

(c) लता (d) गुड़िया

Part B $(5 \times 5 = 25)$

सभी प्रश्नों के उत्तर दीजिए। उत्तर संक्षेप में हो।

11. (a) प्रेमचन्द के व्यक्तित्व और कृतित्व पर एक टिप्पणी लिखिए।

या

(b) कौन–किसके लिए क्या प्रायश्चित करता है?

12. (a) 'उसने कहा था' कहानी में अमृतसर शहर का वर्णन कैसे किया गया है।

या

(b) पाँच मिनट कहानी की शीर्षक की सार्थकता पर विचार कीजिए।

13. (a) निर्मला उपन्यास के शुरुआत में निर्मला ने क्या स्वप्न देखा? उसका परिणाम क्या हुआ?

या

(b) सियाराम किसके साथ भाग गया? और क्यों?

14. (a) भुवनमोहन सिन्हा का संक्षिप्त परिचय दीजिए।

या

(b) 'सुधा' का संक्षिप्त परिचय दीजिए।

15. (a) 'संज्ञा' किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

या

(b) सर्वनाम किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

Part C $(3 \times 10 = 30)$

किन्हीं तीन प्रश्नों के उत्तर दीजिए।

उत्तर विस्तार से हो।

16. (a) कहानी कला के तत्वों के आधार पर 'पाँच मिनट' कहानी का सारांश लिखिए।

या

(b) 'निर्मला' उपन्यास का सारांश लिखिए।

17. (a) 'तोताराम' का चरित्र चित्रण कीजिए।

या

(b) विशेषण किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

18. (a) अंग्रेजी में अनुवाद कीजिए।

उनकी तेज़-मिज़ाजी की एक घटना मुझे याद है। कोई 5-6 वर्ष की मेरी उम्र रही होगी। एक दिन मैंने पिताजी की मेज़ पर दो फ़ाउंटेन पेन पड़े देखे। मेरा जी ललचाया। मैंने दिल में कहा - पिताजी एक साथ दो पेनों का क्या करेंगे? एक मैंने अपनी जेब में डाल लिया। बाद में बड़े ज़ोरों की तलाशी

हुई कि पेन कहाँ चला गया। अब तो मैं घबराया। मगर मैंने बताया नहीं। पेन मिल गया और मैं अपराधी माना गया। पिताजी बहुत नाराज हुए और मेरी खूब मरम्मत की। मैं दर्द और अपमान से अपना-सा मुँह लिये माँ की गोद में दौड़ गया। कई दिनों तक मेरे छोटे-से बदन पर क्रीम और मलहम लगाये गये।

या

(b) एक रोज़ राज़ा दशरथ शिकार खेलने गये, और घोड़ा दौड़ाते हुए एक नदी के किनारे जा पहुँचे। नदी दरख्तों की आड़ में थी। वहीं, जंगल में श्रवण नाम का एक अंधा रहता था। उसकी पत्नी भी अंधी थी। उस वक्त उनका नौजवान बेटा नदी में पानी भरने गया हुआ था। पानी में उसके कलसे के डूबने की आवाज़ सुनकर राजा ने समझा कि कोई जंगली हाथी नहा रहा है। फौरन आवाज़ी निशाना बांधकर तीर चला दिया।

C–0042

Sub. Code
11812/96612/ 11612/97212/ 96312/96412/ 91812/91912/ 91411/91512

U.G. DEGREE EXAMINATION, APRIL 2019

First Semester/First Year

Part II — English

PROSE AND COMMUNICATION SKILLS

(2016/2018 onwards)

(Common for B.Sc. (Astanga Yoga/B.Sc. (Nutri. Diet.)/B.Sc. (Com.Sci.)/B.Sc. (Aero. Sci.)/B.B. (A & AM)/B.Sc. (FD)/B.Sc. (Nauti. Sci.)/B.Sc. (Aviation)/B.Sc. (ID)/B.Sc. (Optometry))

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the benefits of education according to Sir Richard Livingstone?
2. Who was the first women Prime Minister of India?
3. How does the description of Raskolnikov's visit with the women develop the theme of 'Crime and Punishment'?
4. What did the astroger say about Velan?
5. Why does the teacher support the boy at the end of the story in 'Crime and Punishment'?
6. What is survival according to Atwood?

7. Write about the patriotism of Sarojini Naidu.

8. Rame ———— (Sing) Yesterday.

9. They ———— (go) to the temple just now.

10. Sreeja moves closer to ———— Hotel (use articles).

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Describe the views of Livingstone in 'Essential of Education'.

Or

(b) Explain the achievements of Indira Gandhi.

12. (a) What is the theme depicted in Gardiner's 'On Habits'?

Or

(b) Comment on the humour in the story 'The Crime and Punishment'.

13. (a) Comment on the techniques of Atwood's 'Survival'.

Or

(b) Elucidate the journey of Sarojini Naidu as a freedom fighter.

14. (a) Pick out the adjectives/adverbs in the following sentences.

(i) My train arrived late, as usual.

(ii) She worked carefully with the sick child.

(iii) She quickly adjusted the fees.

(iv) We deal on a strictly cash basis.

(v) The mechanic's tools were good.

Or

(b) Identify the types of sentences.

(i) Bring me that file.

(ii) Who told you this?

(iii) My mother makes delicious cookies.

(iv) Fetch me a glass of water.

(v) I have two sisters.

15. (a) Fill in the blanks with appropriate prepositions.

(i) He travelled all ———— the world when he was eighty years old.

(ii) The telephone kept ———— ringing, but no one attended.

(iii) His manners ———— him.

(iv) I have known his ———— a long time.

(v) Small pox has been eradicated ———— India.

Or

(b) Identify the sentence pattern.

(i) Babu is a student.

(ii) He bought his girl friend a ring.

(iii) Close the window.

(iv) My brother is doing homework.

(v) She made the problem complicated.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) What concepts of law are prominent in 'Crime and Punishment'?

Or

(b) Explain Indira Ganghi's views on 'On the power of youth'.

17. (a) Critically analyse Gardiner's 'On Habits'.

Or

(b) 'The danger in adopting the Indians as ancestors' is that you may identify with them as victims rather than as real inhabitants of a land - Elucidate.

18. (a) Fill in the blanks with suitable form of the verbs.

(i) He ———— hard these days. (study)

(ii) My father ———— for Mumbai Tomorrow. (leave)

(iii) Water ———— at 100°C. (boil)

(iv) Birds ———— is the air. (fly)

(v) The sun ———— now. (rise)

(vi) It was cloudy in the morning, but the sun ———— now. (shine)

(vii) Cricket ———— in England. (originate)

(viii) Sam ———— gently with everyone. (speak)

(ix) I ———— your letter yesterday. (receive)

(x) Our country ———— steady progress under the present Government. (make)

Or

(b) (i) Use appropriate article in the following sentences.

(1) This book has won ———— booker prize.

(2) She goes to temple in ———— mornings.

(3) I am ———— university student.

(4) She returned after ———— hour.

(5) ———— sun rises in the east.

(ii) Use appropriate preposition in the following sentences.

(1) The paper is ———— my desk.

(2) I will meet you ———— 12 pm.

(3) I am currently staying ———— a hotel.

(4) I want to lose 5 kg ———— one month.

(5) Could you get me this picture ———— a larger size?

———————

C–0043

Sub. Code
11813

B.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Aeronautical Science

MATHEMATICS – I

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Find the rank of the matrix $A = \begin{pmatrix} 1 & -1 & 2 & -1 \\ -2 & 2 & 4 & -2 \\ 1 & 1 & 2 & 1 \end{pmatrix}$.

2. Find sum and product of eigen values of the matrix $A = \begin{pmatrix} -1 & 2 \\ 2 & 1 \end{pmatrix}$.

3. Find co-ordinates of the points of intersection of the line joining the points $A(2, 1, -3)$ and $B(5, 4, -2)$.

4. Find equation of the plane passing through the point (2, 1, 0) and perpendicular to the planes $2x - y - z = 0$ and $x + 2y - 3z = 5$.

5. Find radius of the curvature of the curve $y = \log x$ at (–1, 1).

6. Find centre of curvature of the curve $y = x^2 - 2x$ at $(1, -1)$.

7. If $u = \log\left(x^3 + y^3 + z^3 - 3xyz\right)$, show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = \frac{3}{x + y + z}$.

8. Find when the function $y = (x+1)^2(x-2)$ is maximum.

9. Find the I.F. of $\frac{dy}{dx} + y\tan x = \cos^3 x$.

10. Find the P.I. of $\left(D^2 + 3D + 2\right)y = \sin 2x$.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Verify that $\frac{1}{3}\begin{pmatrix} -1 & 2 & -2 \\ -2 & 1 & 2 \\ 2 & 2 & 1 \end{pmatrix}$ is orthogonal.

Or

(b) Calculate A^4 for the matrix $A = \begin{pmatrix} 2 & 1 & 2 \\ 0 & 2 & 3 \\ 0 & 0 & 5 \end{pmatrix}$.

12. (a) Find foot N of the perpendicular drawn from $(-2, 7, -1)$ to the plane $2x - y + z = 0$.

Or

(b) Show that the plane $2x - 2y + z = 9$ touches the sphere $x^2 + y^2 + z^2 + 2x + 2y - 7 = 0$.

13. (a) Show that radius of curvature at any point (x, y) of the centenary $y = c\cosh\left(\frac{x}{c}\right)$ is $\frac{y^2}{c}$.

Or

(b) Show that ρ at any point $\left(a\cos^3\theta, a\sin^3\theta\right)$ on the curve $x^{2/3} + y^{2/3} = a^{2/3}$ is $2a\sin\theta\cos\theta$.

14. (a) Expand $f(x,y) = e^x \sin y$ by Taylor's Theorem in powers of x and y as far as the terms of second degree.

Or

(b) Discuss the maxima and minima of $f(x,y) = xy + (x+y)(1-2x-3y)$.

15. (a) Solve $\frac{dy}{dx} + \frac{3x^2y}{1+x^3} = \frac{\sin^2 x}{1+x^3}$.

Or

(b) Solve $\left(D^2 + D + 1\right)y = \sin 2x$.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Find the eigen values and the eigen vectors of the matrix

$$A = \begin{pmatrix} 13 & -3 & 5 \\ 0 & 4 & 0 \\ -15 & 9 & -7 \end{pmatrix}$$

Or

(b) Write down the matrix of the Quadratic form $Q = x_1^2 + 2x_2^2 - 3x_3^2 + 4x_1x_2 + 5x_1x_3$ and verify that it can be written as X^TAX.

17. (a) Prove that the lines $\frac{x-4}{1}=\frac{y+3}{-4}=\frac{z+1}{7}$ and $\frac{x-1}{2}=\frac{y+1}{-3}=\frac{z+10}{8}$ are coplanar and find their point of intersection.

Or

(b) Show that the equation of the evolute for the curve $x^{2/3}+y^{2/3}=a^{2/3}$ is $(x+y)^{2/3}+(x-y)^{2/3}=2a^{2/3}$.

18. (a) Find the minimum values of x^2yz^3 subject to the condition $2x+y+3z=a$.

Or

(b) Solve, by the method of variation of parameters, the equation $\frac{d^2y}{dx^2}+4y=4\tan 2x$.

———————

C–0044

Sub. Code
11814

B.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Aeronautical Science

WORKSHOP PRACTICES

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Mention few safety precautions while handling oils and chemicals.

2. Mention various classifications of fire.

3. Mention various common hand tools used in maintenance Bay.

4. Define dimensions and allowances.

5. Draw a neat sketch of Inside Caliper and outside caliper.

6. Discuss the importance of precision instruments.

7. Mention the various types of gauges used in metrology.

8. Define fits and tolerance.

9. Define lathe.

10. Define Brazing.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain various safety precautions to be followed for oxygen equipments.

Or

(b) Explain various safety precautions to be followed for Chemical Equipments.

12. (a) Explain various types of fire and their sources.

Or

(b) Explain various fire extinguishers with diagrams.

13. (a) Explain any 4 types of Hammer with sketches.

Or

(b) Explain various types of punches with a neat sketch.

14. (a) Explain various types of bolts with proportions.

Or

(b) Explain the principle of metallic arc welding with a neat sketch.

15. (a) Explain the construction of any one milling machine with a sketch.

Or

(b) Explain various types of gears with sketches.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain various safety precautions to be followed while handling electricity.

Or

(b) Explain the principle of workshop location and arrangement of tools.

17. (a) Explain standards of workmanship in maintenance Bay.

Or

(b) Explain the construction and working of outside micrometer with a sketch.

18. (a) Explain various parts of lathe.

Or

(b) Explain various operations performed on lathe.

———————

C–0045

Sub. Code
11815

B.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Aeronautical Science

BASIC ELECTRICITY AND ELECTRONICS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. State Thevenin's theorem.

2. Distinguish between step up and step down transformers.

3. Write down the EMF equation of dc generator.

4. Define the efficiency of a dc motor.

5. Explain the losses in 3-phase induction motor.

6. What is a universal motor?

7. What is an inductor?

8. How will you convert a galvanometer into a voltmeter?

9. What is a rectifier?

10. What are choppers?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) State and prove Norton's theorem.

Or

(b) Describe the principle, construction and working of a transformer. Obtain the EMF equation.

12. (a) Describe the construction and working of dc generator.

Or

(b) Discuss the speed-torque characteristics of compound motor.

13. (a) Discuss the torque-slip curves in three phase induction motors.

Or

(b) Explain the starting of a single phase induction motor by shaded pole motor.

14. (a) Discuss the essentials of biasing network.

Or

(b) Explain the construction, working and characteristics of UJT.

15. (a) Discuss the characteristics of Shockley diode.

Or

(b) Give a brief account on inverters.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Derive the equation for current and impedance of an ac circuit containing R and C in series.

Or

(b) Describe the construction and working of a DC motor. Discuss the losses in it.

17. (a) With a neat sketch, describe the construction and working of single phase induction motor.

Or

(b) Draw the diagram of a CRO and explain its construction and working.

18. (a) Discuss the construction, working and characteristics of SCR. Give its applications.

Or

(b) Write a note on :

(i) Transformer cooling. (3)

(ii) Colour coding (3)

(iii) SMPS. (4)

———————

C–0046

Sub. Code
11621 T/
11821 T/
96321 T/
96421 T/
96621 T

U.G. DEGREE EXAMINATION, APRIL 2019

Second Semester/Second Year

Part I — Tamil

இலக்கணமும் படைப்பிலக்கியமும்

(2016 onwards)

(Common for B.Sc. (Astanga Yoga)/B.Sc.(Nutri.Diet)/B.Sc.(C.S.)/B.Sc.(Aero.Sci.)/ B.Sc.(Nauti.Sci.)

Time : 3 Hours Maximum : 75 Marks

பகுதி அ (10 × 2 = 20)

எல்லா வினாக்களுக்கும் ஓரிரு வரிகளில் விடை தருக.

1. சார்பெழுத்துக்கள் என்றால் என்ன?

2. உடம்படுமெய் பற்றி விவரி.

3. 'பாரதியார்' குறிப்பு வரைக.

4. கு.ப.ரா. பற்றி எழுதுக.

5. புதுமைப்பித்தன் இயற்பெயர் தருக.

6. தமிழ் வளர்ச்சித் துறையின் பணிகளை விவரி.

7. இணைய வேலைவாய்ப்பு – விளக்குக.

8. சிறுகதை இலக்கணம் தருக.

9. கட்டுரையின்அமைப்பு யாது?

10. இண்டர்நெட் குறிப்பு வரைக.

பகுதி ஆ $(5 \times 5 = 25)$

எல்லா வினாக்களுக்கும் ஒரு பக்க அளவில் விடை வரைக.

11. (அ) வல்லினம் மிகும் இடங்களைச் சுட்டுக.

(அல்லது)

(ஆ) மொழியிறுதியில் வரும் எழுத்துக்களைத் தருக.

12. (அ) புதுக்கவிதையின் தோற்றம் வளர்ச்சி பற்றி விவரி.

(அல்லது)

(ஆ) பாரதிதாசன் கால கவிதைச் சூழல் பற்றி உரைக்க.

13. (அ) இணையத்தின் பயன்பாட்டினைச் சுருக்கி வரைக.

(அல்லது)

(ஆ) இணையமும் தமிழும் பற்றி எழுதுக.

14. (அ) தந்தை மகனுக்கு ஆற்றும் நன்றி யாது?

(அல்லது)

(ஆ) சாபவிமோசனம் கதைக் கருவை விளக்குக.

15. (அ) சிறுகதையின் சிறப்புகள் யாவை?

(அல்லது)

(ஆ) கவிதை படைப்பில் கவனிக்க வேண்டியன யாவை?

பகுதி இ (3 × 10 = 30)

எல்லா வினாக்களுக்கும் விரிவான விடை தருக.

16. (அ) வல்லினம் மிகா இடங்களைச் சான்றுடன் தருக.

(அல்லது)

(ஆ) கண்ணதாசன் கால கவிதைச் சூழலைப் புலப்படுத்துக.

17. (அ) சிறுகதை வளர்ச்சி குறித்துத் தெளிவுபடுத்துக.

(அல்லது)

(ஆ) இணையத்தின் இன்றைய வளர்ச்சிப் போக்கைக் காட்டுக.

18. (அ) 'வானவில்' எனும் தலைப்பில் 20 வரிகளில் கவிதை படைக்க.

(அல்லது)

(ஆ) 'அதிசயம்' எனும் பொருண்மையில் ஒரு பக்க அளவில் சிறுகதை படைக்க.

———————

C–0047

Sub. Code
11621F/11821F/ 96121F/96221F/ 97221F/91821F/ 91921F

U.G. DEGREE EXAMINATION, APRIL 2019

Second Semester/Second Year

Part I – French

FRENCH – II

(2016/2018 onwards)

[Common for B.B.A. (IB)/B.Com. (B.F.S &I)/ B.Sc. (Aviation)/ B.Sc.(Aero. Sci.)/B.Sc. (FD)/B.Sc. (ID)/ B.Sc. (Nauti. Sci.)]

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Translate in French:
   (a) Alphabets
   (b) Numbers
2. Comment tu t'appelles?
3. Comment allez – vous?
4. Les filles dans la classe ————————.
5. Les garsons dans la classe ————————.

6. Qu'est –ce que c'est?

7. Il y a combien de jours dans ure semaine?

8. Quels Sant les jours de la semaine?

9. Vous allez à l'école?

10. Aujourd hui, nous sommes quel jour?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. Donnez les mots Français:

(Give the French Words)

(a) (i) Hello !

(ii) Good Night !

(iii) Good bye !

(iv) Fine, thank you !

(v) How are you?

Ou

(b) (i) See you tomorrow !

(ii) What is your name?

(iii) Good Evening !

(iv) Where are you?

(v) Good day !

12. Ecrivez les nombres suivants en chiffres.

(Write the following number in figure)

(a) (i) Seize (ii) Douze

(iii) Treize (iv) Onze

(v) Quatre

Ou

(b) (i) dix-neuf (ii) neuf

(iii) cinq (iv) quinze

(v) vingt

13. Recopiez les mots Masculins et Féminins

(Recopy masculine and feminine words)

(a) (i) une boutique ———— ————

(ii) un café ———— ————

(iii) un chocolat ———— ————

(iv) un cinema ———— ————

(v) une crème ———— ————

Ou

(b) (i) un film ———— ————

(ii) un hotel ———— ————

(iii) un menu ———— ————

(iv) un métro ———— ————

(v) un parfum ———— ————

14. Complétez avec le verbe « être »

(Complete with the verb "être")

(a) (i) Je ———— américain

(ii) il ———— indien

(iii) Nous ———— italiens

(iv) ils ———— indiens

Ou

(b) (i) Tu ———————— Français

(ii) Elle ———————— indienne

(iii) Vous ———————— Français

(iv) Elles ———————— Françaises

15. Écrivez les hures en letters

(Write the given timings in letters)

(a) (i) 1.00 am – (ii) 2.00 am –

(iii) 3.00 am – (iv) 4.00 am –

(v) 5.00 am –

Ou

(b) (i) 6.00 pm – (ii) 7.00 pm –

(iii) 8.00 pm – (iv) 9.00 pm –

(v) 10.00 pm –

Part C (3 × 10 = 30)

Answer any **three** questions.

16. (a) Donnez le feminin de:

(i) Oncle (ii) Père

(iii) Journaliste (iv) Neveu

(v) Marchand (vi) homme

(vii) indien (viii) épicier

(ix) boucher (x) Frére

Ou

(b) Donnez le masculine de :

(i) Fille (ii) Concierge

(iii) Cliente (iv) maitresse

(v) vendeuse (vi) patronne

(vii) chinoise (viii) grand-mere

(ix) directrice

17. Formez les adverbs des adjectifs suivants:

(a) (i) seul (ii) malheureux

(iii) autre (iv) courageux

(v) vrai (vi) grave

(vii) adroit (viii) léger

(ix) fidèle (x) propre

Ou

(b) (i) lent (ii) facile

(iii) dur (iv) parfait

(v) frais (vi) long

(vii) rapide (viii) dernier

(ix) agréable (x) sévère

18. Verbes – Conjuguez les verbes au présent

(a) (i) Il ———— ses enfants.

(ii) Ils ———— les courses au supermarché

(iii) Je ———— le journal tous les jours.

(iv) Vous ———— bonjour à un ami.

(v) Elle ———— souvent.

(vi) Nous ———— en retard

(vii) Tu ———— un café?

(viii) Ils ———————— en France depuis deux ans

(ix) Nous ———————— le train à 10 heures

(x) Vous ———————— ce monsieur?

Ou

(b) (i) je ———————— tout de suite

(ii) Ils ———————— trois enfants.

(iii) Tu ———————— à quelle heure?

(iv) Elle ne ———————— pas bien.

(v) Nous ———————— un exercise.

(vi) Qu'est –ce que vous ————————?

(vii) Elles ———————— venir avec nous?

(viii) Tu ———————— de Pa guitare?

(ix) Je ———————— du café au petit déjeuner.

(x) Nous ———————— au restaurant.

———————————

C–0048

Sub. Code
11621H/11821H/
96121H/96221H/
97221H/91521H/
91821H/91921H

U.G. DEGREE EXAMINATION, APRIL 2019

Second Semester/Second Year

Part I – Hindi

Hindi II – PROSE, GRAMMAR AND TRANSLATION

(2016/2018 onwards)

[(Common for B.B.A. (IB)/B.Com.(B.F.S &I)/ B.Sc.(Aviation)/B.Sc.(Aero. Sci.)/B.Sc. (Nauti. Sci.)/B.B.A. (A & AM)/B.Sc. (ID)/B.Sc. (FD)]

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

सभी प्रश्नों के उत्तर संक्षेप में लिखिए।

1. 'भारतीय संस्कृति' पाठ का लेखक कौन है और यह पाठ किस विधा की रचना है?

2. घृणा और भय में क्या सम्बन्ध है?

3. 'रजिया' पाठ का लेखक कौन है? और रजिया की शादी किससे हुई?

4. मक्रील कहानी का लेखक कौन है? और इस कहानी में किसका चित्रण किया है?

5. 'बहता पानी निर्मला' यह पाठ किस विधा की रचना है? और यह पाठ किसके चयनित है?

6. हजारों वर्षों में एकाध बार जो आदमी नजर आते हैं, उनमें महात्मा गाँधी का नाम क्यों आता है?

7. लिंग बदलिए।

(a) भैंस (b) बिल्ली

(c) बहन (d) बादशाह

8. अकर्मक क्रिया किसे कहते है?

9. सकर्मक क्रिया किसे कहते हैं?

10. सजातीय कर्म किसे कहते हैं?

Part B $(5 \times 5 = 25)$

सभी प्रश्नों के उत्तर लिखिए।

संदर्भ सहित व्याख्या कीजिए।

11. (a) जहाँ- जहाँ हमारे नैतिक सिद्धान्तों का वर्णन आया है, अहिंसा को ही उनमें मुख्य स्थान दिया गया है।

या

(b) कौन नहीं जानता कि वही विष, जो प्राणों का नाश कर सकता है, प्राणों का संकट भी दूर कर सकता है।

12. (a) जीभ अभ्यासवश एक काम किये जा रही थी, अर्न्तमन कुछ दूसरा ही ताना-ज्ञाना बुन रहा था।

या

(b) 'आपकी कृपा है, आप मेरा साथ दे रही हैं। संसार में साथी बडी चीज है'।

13. (a) इस तरह बारह दिन और काटने पड़े, क्योंकि सोनारी के सब रास्ते बन्द थे।

या

(b) इसीलिए उन्होंने निष्ठापूर्वक अपने को जनता का बनालिया। वे उसके अपने हो गये।

व्याकरण:

14. (a) वर्तमान काल के भेदों को समझाइए।

या

(b) भूतकाल के भेदों को समझाइए।

15. (a) 'ने' विधि का प्रयोग समझाइए।

या

(b) अपूर्ण क्रिया से क्या मतलब है? उदाहरण दीजिए।

Part C $(3 \times 10 = 30)$

सभी प्रश्नों के उत्तर लिखिए।

उत्तर विस्तार से लिखिए।

16. (a) 'भारतीय संस्कृति' पाठ का सारांश लिखिए।

या

(b) 'रजिया' पाठ का सारांश लिखिए।

17. (a) 'कारक' किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

या

(b) क्रिया विशेषण किसे कहते हैं? अर्थ के अनुसार इसके कितने भेद हैं? उदाहरण सहित समझाइए।

18. हिन्दी में अनुवाद कीजिए।

(a) One day Prince Siddhartha was playing in the palace - garden. He saw some wild swans flying in the sky. He loved these fine birds very much. Suddenly one of the swans dropped down from the sky and fell at his feet. There was an arrow in its side. Blood was coming out of its body. The prince felt very very unhappy. He took the arrow out of the bird gently. He put some green leaves on the wounded part. The bird slowly opened its eyes and looked at the prince. Now the prince was very happy. The bird did not die. The prince had given it life again.

या

(b) In grand mothers tales the crow is always described as knowing about events much before we come to know of them. Whether it is so I cannot say. But since some birds and beasts have keener sight, smell and hearing than human beings, it is possible then can sense somethings that we cannot. In the 1934, a violent earthquake shook Bihar and caused terrible destruction. It was bright sunny day in January and there was no hint that any such disaster would occur.

C–0049

Sub. Code
11622/11822/ 91822/91922/ 91522/91421/ 96322/96422/ 97222/96622

U.G. DEGREE EXAMINATION, APRIL 2019

Second Year — Second Semester

Part II — English

PROSE AND EXTENSIVE READING AND COMMUNICATION SKILLS

(Common for B.Sc. (Astanga Yoga)/ B.Sc. (Nutri.Diet)/B.Sc. (C.S)/B.Sc. (Aero. Sci.)/ B.Sc. (Nauti. Sci)/B.Sc. (Aviation)/B.B.A. (A & AM)/ B.Sc. (FD)/B.Sc. (ID)/B.Sc. (Optometry))

(2016/2018 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What instances of corruption in India are given by Kalam?

2. What are the self-contradictions in Plato's attitude to art and the artist?

3. What is the reason for Nehru's feeling of proud thankfulness?

4. Who are wobblers and turn-coats?

5. What is the main theme in "The conjurer's Revenge"?

6. What is the moral of the story "An Astrologer's Day"?

7. Define Adjective clause.

8. Fill in the blanks with the correct conjunction :

   (a) I ————————my sister are playing chess.

   (b) Generally she travels by bus to school, ———————— today she is going on foot.

9. Rama said to his visitor, "Who are you"? (Change into Indirect speech)

10. Kala is brighter than any other girls in the class. (Change into Superlative degree)

Part B $(5 \times 5 = 25)$

Answer **all** the questions.

11. (a) Indians passivity, expecting everything to be done by the government. Explain from view of kalam.

Or

(b) What is the duty of society to the artist and the artist to society?

12. (a) Of what use is discussion and debate. Explain.

Or

(b) What does Holt say about ballet training? What does he deduce from it?

13. (a) Write a short note on "After Twenty Years".

Or

(b) Describe the character Astrologer from "Astrologer's Day".

14. (a) Differentiate Adverbial and Adjective clause.

Or

(b) Write five sentences using conjunction.

15. (a) Change the following sentences into direct speech :

(i) He said that he had got a tooth ache.

(ii) Manu said that he was very busy then.

(iii) She told us to hurry up.

(iv) He asked her to give him a cup of water.

(v) She said that she was going to college.

Or

(b) What are the different degrees of adjectives? Explain with examples.

Part C $(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Write an essay on Kalam's three visions.

Or

(b) Write an essay in about words, examining the merits and demerits of the three kinds of discipline.

17. (a) Bring out the humour in Stephen Leacock's story "The Conjurer's Revenge".

Or

(b) Summarize the story "An Astrologer's day".

18. (a) Combine the following sentences, using the restrictive pronoun. (that)

(i) This is the girl; he is going to marry her.

(ii) You broke the window pane. Are you not the follow?

(iii) Noble is the youth, he loves discipline

(iv) Man can Laugh. He is the only animal to do so

(v) I know little. The little is not very deep.

Or

(b) Change the following sentences into other degrees of comparison :

(i) No other book I have read is so good as this

(ii) Very few kings were so great as Ashoka

(iii) He was one of the noblest of men

(iv) Shakespeare has written more interestingly than most other writers.

(v) In India, may is hotter than any other month.

C–0050

Sub. Code
11823

B.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Aeronautical Science

MATHEMATICS – II

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Evaluate $\int_0^2 \int_0^1 4xy\,dx\,dy$.

2. Define Surface integral.

3. Define solenoidal vector.

4. If $\bar{f}$ is irrotational, prove that it is conservative.

5. Define a harmonic function and give an example.

6. Find the critical points of the transformation $w = \frac{1}{z}$.

7. Find the Laplace transform of $\cos h\,at$.

8. State the convolution theorem.

9. Define median and mode.

10. Show that the correlation coefficient lies between –1 and +1.

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Evaluate $\int_0^1 \int_0^{\sqrt{1+x^2}} \frac{1}{1+x^2+y^2} dy\, dx$

Or

(b) Evaluate $\iint xy(x^2+y^2)^{\frac{1}{2}} dx\, dy$ over the positive quadrant of the circle $x^2+y^2=k^2$.

12. (a) Find *grad* r^n where $r = |\bar{r}|$ and $\bar{r} = x\bar{i} + y\bar{j} + z\bar{k}$.

Or

(b) Show that $\iint_S (yz\bar{i} + zx\bar{j} + xy\bar{k}) \cdot \hat{n}\, ds = \frac{3}{8}$ where S is the surface of the sphere $x^2+y^2+z^2=1$ in the first octant.

13. (a) Prove that an analytic function with constant real part is constant.

Or

(b) Find the image of the line $y = 3x+1$ under the transformation $w = z^2$.

14. (a) Find :

(i) $L\left[\frac{1+2t}{\sqrt{t}}\right]$ and

(ii) $L\left[\sin\sqrt{t}\right]$.

Or

(b) State and prove initial value theorem.

15. (a) Calculate the mean and standard deviation for the following :

x	25	35	45	55	65	75	85
f	3	61	132	153	140	51	2

Or

(b) If θ is the angle (acute between the two regression lines, prove that $\sin\theta \leq 1 - r^2$.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Change the order of integration in $\int_1^2 \int_0^{\frac{4}{x}} xy \, dy \, dx$ and then evaluate it.

Or

(b) Verify Green's theorem in the plane for $\iint_C [(3x^2 - 8y^2)dx + (4y - 6xy)dy]$ where C is the boundary of the region $x = 0$, $y = 0$ and $x + y = 1$.

17. (a) If $f(z)$ is the regular function of z, prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right)|f(z)|^2 = 4|f'(z)|^2$.

Or

(b) Prove that $u = x^3 - 3xy^2 + 3x^2 - 3y^2 + 1$ is harmonic. Also find the conjugate harmonic function V and the corresponding analytic function $u + iv$.

18. (a) Solve : $y'' - 4y' + 8y = e^{2t}$, by the method of Laplace transform $y(0) = 2$ and $y'(0) = -2$.

Or

(b) Ten competitors in a musical test were ranked by three judges A, B, C in the following order

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

Using rank correlation method, discuss which pair of judges has the nearest approach to common likings in music.

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C–0051

Sub. Code
11824

B.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Aeronautical Science

ENGINEERING MECHANICS AND STRENGTH OF MATERIALS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Explain the concepts of forces.

2. Explain the concepts of status.

3. Explain the centere of gravity.

4. What is meant by equivalent forces?

5. Explain journal bearing.

6. What is rolling resistance?

7. Give any two analytical methods to analysis the perfect frames.

8. Explain the term force table.

9. Define stress.

10. What is shear force?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Differentiate between coplanar and non-coplanar in forces.

Or

(b) Write a short notes on virtual work.

12. (a) Distinguish between external and internal forces.

Or

(b) Write a short notes on motion of porjectiles.

13. (a) Write a short notes on screw jack velocity ratio.

Or

(b) Explain :

(i) Co-efficient of friction

(ii) Angle of friction.

14. (a) Explain :

(i) Perfect frames

(ii) Redundant frames.

Or

(b) Explain the resolution of forces using methods of Joints.

15. (a) Write a short notes on Mohr's circles.

Or

(b) Write a short note on Euler's theory of column.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain moment of forces. Write a essay on couples lever arm.

Or

(b) Describe briefly about simple harmonic motion of vibrations.

17. (a) What is mechanical efficiency? How it is calculated. Explain.

Or

(b) Explain the structure of cantilever trusses with one end freely and other end hinged on rollers subjected to skew load.

18. (a) Write an essay on beams that subjected to point load and UDL shear force.

Or

(b) Classify the Euler's theory of column and Rankine formula for columns.

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C–0052

Sub. Code
11631/11831/ 91531/91831/ 91931/96331/ 96431/91431

U.G. DEGREE EXAMINATION, APRIL 2019

Third Semester

English — II

Part II — COMMUNICATIVE SKILLS

(Common for B.Sc. (Aero.Sci)/B.Sc. (Nauti.Sci)/ BBA (A & AM)/ B.Sc. (Optometry)/B.Sc. (FD)/ B.Sc. (ID)/B.Sc. (C.S)/B.Sc. (Nutri.Diets))

(2016/2018 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define communication.

2. Describe the principles of oral communication.

3. Give examples for homonyms and homophones.

4. What is meant by relative clauses?

5. Explain verb with an example.

6. What are called parts of speech?

7. Mention the vowels in English.

8. Bring out the importance of falling intonation.

9. What is called silent reading?

10. What are the characteristics of good hand writing?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Establish the important of communication.

Or

(b) What are the barriers of effective communication?

12. (a) Write a short note on question tags.

Or

(b) Differentiate homonyms and homophones with examples.

13. (a) Fill in the blanks with correct infinite

(i) I decided ———————— (leave) the job.

(ii) She pretended ———————— (know) me.

(iii) He desires ———————— (be) a professor.

(iv) The company considered ———————— (sell) its main building.

(v) Do you enjoy ———————— (take) care of your pet?

Or

(b) Write a short note on verbs often confused.

14. (a) Describe the vowels.

Or

(b) Differentiate falling and rising intonation.

15. (a) What is skimming and scanning?

Or

(b) Bring out the salient features of mechanics of handwriting.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Distinguish verbal and non-verbal communication.

Or

(b) Write a short note on the following :

(i) Verbs often confused

(ii) Adverbs often confused.

17. (a) Complete the following sentences with the correct question tag.

(i) You don't like me , ——————?

(ii) It isn't raining, ——————?

(iii) You've done your homework, ——————?

(iv) I'm not late, ——————?

(v) I'm invited to your party, ——————?

(vi) You like German food, ——————?

(vii) You'll come to my party, ——————?

(viii) You remembered to feed the cat, ——————?

(ix) Let's play tennis, ——————?

(x) Nobody came to your party, ——————?

Or

(b) Write an essay on intonation.

18. (a) What are the salient features for good reading?

Or

(b) Explain SQ3R.

———————

C–0053

Sub. Code
11832

B.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Aeronautical Science

THERMODYNAMICS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. State 1st law of thermodynamics.

2. Define perpetual motion machine (PMM – II).

3. Define Work Transfer.

4. Mention various classifications of Piston Engine.

5. Define Air-standard Cycle.

6. Mention various stages of Otto Cycle with P-V diagram.

7. Define Boyle's Law and Zeroth Law of Thermodynamics.

8. Mention various classification of gas turbines.

9. State Law of conservation of Mass and Equation of continuity.

10. Define Compression.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain 2nd law of thermodynamics with diagrams.

Or

(b) Explain the purpose of Multistage Compression in Air Compressors.

12. (a) Explain the principle of reversed heat engine.

Or

(b) Explain Carnot cycle with diagram.

13. (a) Explain air standard efficiency of Diesel Cycle.

Or

(b) Explain Air standard efficiency of dual combustion cycle.

14. (a) Explain various types of fuels.

Or

(b) Explain the working of Reciprocating Air compressor with diagram.

15. (a) Explain the determination of excess air supplied.

Or

(b) Explain the classification of piston engine.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the working of vapour absorption Refrigeration cycle.

Or

(b) Explain steady flow process energy equation.

17. (a) Explain the working of rotary compressor.

Or

(b) Explain the working of centrifugal compressor.

18. (a) Explain the working of constant pressure closed cycle gas turbine.

Or

(b) Explain the working of Axial Flow Compressor.

———————

C–0054

Sub. Code
11833

B.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Aeronautical Science

FLUID MECHANICS AND HYDRAULIC MACHINES

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define specific weight and density.
2. Notes on U-tube manometer.
3. Define Buoyancy.
4. Define Flownet.
5. What is the assumption of Bernoulli's equation?
6. Write the formula for Darcy Weisbach.
7. Define Centrifugal pump.
8. Define Gear pump.
9. Difference between Hydraulic and Pneumatic.
10. Draw Hydraulic press.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Define pressure. Explain about absolute, gauge, vacuum pressure.

Or

(b) Derive an expression for Pascal's law.

12. (a) Derive velocity potential function.

Or

(b) (i) Define discharge.

(ii) The diameter of a pipe at the section 1 and 2 are 10 cm and 15 cm respectively. Find the discharge through the pipe if the velocity of water flowing through the pipe at section 1 is 5 m/s. Determine also the velocity at section 2.

13. (a) Derive an Euler's equation.

Or

(b) (i) What are the major losses in flow through pipe?

(ii) Explain about loss in Equivalent pipe.

14. (a) Force exerted by a jet on Hinged plate.

Or

(b) Short notes on Reciprocating pump.

15. (a) Define pneumatic. Explain any three valve operation with diagram.

Or

(b) Notes on Hydraulic Ram (with diagram).

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the various properties of fluid.

Or

(b) Explain about equilibrium of stability of submerged body and floating body with sketch.

17. (a) Explain the application of Bernoulli's equation.

Or

(b) (i) Derive an expression for stream function.

(ii) Explain the various minor losses with diagram.

18. (a) Explain Hydraulic power plant.

Or

(b) Explain :

(i) Hydraulic Intensifier.

(ii) Hydraulic Accumulator.

———————

C–0055

Sub. Code
11834

B.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Aeronautical Science

AERODYNAMICS AND HELICOPTER THEORY

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Relative Humidity and its significance?
2. Write the aerofoil terminology with a neat sketch.
3. What is Profile Drag?
4. What are the primary and secondary control surfaces?
5. What are the parts of a conventional helicopter?
6. What is the necessary of Anti-Torque Rotor?
7. What is balancing of rotor blades?
8. Write the function of stabilizer bar.
9. What is the purpose of tail gear box?
10. What is the function of free-wheeling units?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explain the NACA 4, 5 and 6-digit series of aerofoil.

Or

(b) What are the layers of atmosphere and its assumptions?

12. (a) What are the various control surfaces associated with roll, pitch and yaw motion?

Or

(b) Explain the effect of sideslip in the directional stability of an aircraft.

13. (a) Explain the following :

(i) Blade Flapping

(ii) See-saw System

(iii) Under-slung Rotor.

Or

(b) What do you mean by Autorotation?

14. (a) Explain the construction of Rotor Mast Assembly.

Or

(b) Explain the special inspection done for rotor heads.

15. (a) What is the function of tail rotor drive shaft?

Or

(b) Explain the pitch changing mechanism of tail rotor.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) What is the Bernoulli's principle and derive the equation?

Or

(b) What is translating tendency? How is it corrected?

17. (a) Explain the Longitudinal and lateral static stability of an aircraft.

Or

(b) Explain the static and dynamic balancing procedures of main rotor.

18. (a) With the help of derivation, show that for a level and un-accelerated flight, lift is equal to weight of the aircraft and drag is equal to thrust of the aircraft.

Or

(b) Explain the different types of gearboxes used in helicopter drive shafts.

———————

C–0056

Sub. Code
11835

B.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Aeronautical Science

AIRCRAFT CONSTRUCTION

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Explain aircraft zoning.
2. Explain the types of wings.
3. What is the purpose of trim tabs?
4. What is flap? Name its type.
5. Explain the types of landing gears.
6. Define anhedral angle.
7. Define centre of gravity.
8. What is trunnion?
9. Define Torsion.
10. Define station.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Define bending, stress, strain and shear stress.

Or

(b) Explain about the sandwich construction.

12. (a) Write short notes on

(i) Fail Safe Design

(ii) Safe Life Design.

Or

(b) Explain the constructional features of Rudders.

13. (a) Explain about the types of landing gears in aircraft.

Or

(b) Briefly explain about the nose wheel steering system.

14. (a) Write notes on weight and balance data.

Or

(b) Define: Datum, Arm, Moment, CG, Empty weight.

15. (a) Briefly explain power assisted controls.

Or

(b) How to check fin verticality?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Briefly explain the construction of aircraft fuselage.

Or

(b) Briefly explain the construction of ailerons.

17. (a) Explain in about the Power Boost brake system of transport aircraft.

Or

(b) Explain the aircraft weighing procedure of passenger aircraft.

18. (a) Describe the procedure of Leveling of any transport aircraft.

Or

(b) Explain the Rigging of flight controls.

———————

C–0057

Sub. Code
11641/11841
91541/91441
91841/91941
96341/96441

U.G. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Part II – English

EMPLOYABILITY SKILLS

(Common for B.Sc. (Aero. Sci.)/B.Sc. (Nauti. Sci.)/BBA (A&AM)/B.Sc. (Optometry)/B.Sc. (FD)/B.Sc. (ID)/ B.Sc. (CS)/B.Sc. (Nutri. Diet)

(2016/2018 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is time management?

2. Mention any three uses of foot appearance.

3. What are the basic format for covering letter?

4. Mention any two types of bank Challan.

5. What is summarizing?

6. What are the different types of greetings?

7. How composition helps to improve our writing skills?

8. What is free composition? Give examples.

9. Define body language.

10. Give a short note on personal appearance.

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Describe the characteristics of the Interview.

Or

(b) Do's and Don't's of attending telephone calls.

12. (a) What is Resume? Why it is so important? What is its main objective?

Or

(b) Write a letter to your younger brother advising him to pay more attention to his studies.

13. (a) Destiny is not to be waited for, it is to be achieved. Expand the topic into passage.

Or

(b) What is note-making? How it differs from note-taking?

14. (a) What are the basic principles of composition? How it develops your writing skill?

Or

(b) Write a short note on 'Developing creative competency'.

15. (a) What are benefits of visual aids?

Or

(b) What are benefits of audio aids?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Attempt an essay on punctuality, secretary, and honesty in head to food appearance.

Or

(b) What is Resume? Prepare your own resume with a covering letter to the manager, for the post of typist in a company.

17. (a) How will you prepare portfolios? Describe its types.

Or

(b) What is review writing? Illustrate with example.

18. (a) You missed the 2 O' clock bus to Bangalore where your brother was to wait for you. You can take only the 6 O' clock bus. Send a telegram to your brother.

Or

(b) Explain briefly about non-verbal communication.

———————

C–0058

Sub. Code
11842

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Aeronautical Science

AIRCRAFT SYSTEMS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Describe Hydraulics.
2. State the Primary function of hydraulic fluids.
3. State the purpose of hydraulic seals.
4. What is the purpose of variable restrictors in pneumatic system?
5. State the services operated by pneumatic pressure in aircraft.
6. What is Hypoxia? How it happens?
7. State various materials used with its purposes for air duct in cabin pressurization and air-conditioning system
8. Differentiate De icing and Anti icing.
9. Describe volatility of aviation fuel.
10. What is the purpose of Surge Tanks?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Briefly explain the three principle hydraulic fluid used in aircraft hydraulic system.

Or

(b) Briefly explain the various types of Hydraulic Accumulators.

12. (a) State the advantages and disadvantages of pneumatic system over hydraulic system.

Or

(b) Briefly explain a typical pneumatic system.

13. (a) Describe the composition of Atmosphere.

Or

(b) Describe five basic requirements for the successful functioning of cabin pressurization and air-conditioning system.

14. (a) Briefly explain Hydraulic windshield wiper system.

Or

(b) Briefly explain Deicer boot arid its maintenance.

15. (a) Briefly explain the characteristics and properties of aviation fuel.

Or

(b) With the help of neat schematic picture Explain light aircraft gravity fuel feed system.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) With the help of schematic diagram explain basic power driven hydraulic system.

Or

(b) Explain in detail Hydraulic fluid contamination and contamination checks.

17. (a) Describe the following pneumatic system components.

(i) Pressure regulator.

(ii) Control Valve.

Or

(b) Briefly explain the Air cycle cooling system.

18. (a) What is icing on aircraft? Explain its effects and methods for prevent or control it with examples.

Or

(b) Explain in detail the pressure fueling.

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C–0059

Sub. Code
11843

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Aeronautical Science

AIRCRAFT INSTRUMENTS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the four principle elements which make up an instrument?

2. Define instrumentation.

3. What is pitot and static pressure?

4. What is principle difference between fort in barometer and kew barometer.

5. Define troposphere and stratosphere.

6. Define Mach number and critical Mach number.

7. What do you understand by Standard atmosphere?

8. What are the input and output axis of gyroscope?

9. What is mean by transport wander of gyroscope?

10. What is an 'aperiodic Compass'?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain briefly about the principle of operation of directional gyroscope.

Or

(b) Define ICAO 'Q' codes.

12. (a) Name the type of elastic pressure sensing elements and state their applications?

Or

(b) Why is it preferable for fuel quantity indication system to measure fuel weight rather than fuel volume?

13. (a) Describe a fuel flow meter of volumetric type.

Or

(b) Describe the construction of a typical thermocouple probe used in exhaust gas temperature.

14. (a) Describe the construction and operation of an altimeter.

Or

(b) Describe the function of ASI.

15. (a) What are the advantages of RR and DR Compass?

Or

(b) What is the function of torque pressure indicating system? Describe its construction.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe a typical capacitance type fuel quantity indicating system.

Or

(b) By means of schematic diagram explain the operation of EPR indicating system?

17. (a) With the aid of diagram describe how a ball type of bank indicator indicates

(i) Correctly banked turn?

(ii) A turn to starboard in which aircraft is over banked?

Or

(b) Explain the operation of an instantaneous VSI.

18. (a) Describe how mach number is indicated by measuring in terms of the ratio $\frac{(P - P_S)}{P_S}$.

Or

(b) With the aid of diagram explain the operation principle of 'aneroid barometer'.

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C–0060

Sub. Code
11844

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Aeronautical Science

AIRCRAFT MATERIALS, HARDWARE AND NDT

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Differentiate ferrous and non ferrous metals.
2. Explain properties of Molybdenum.
3. Define tempering.
4. Define surface hardening.
5. Write notes on anodizing.
6. Explain Doping.
7. Write notes on Tensile stress.
8. List out a few types of woods used in aircraft construction.
9. Define carbon fibre's.
10. Write notes on Thermosets.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write notes on titanium and its alloys.

Or

(b) Write notes on magnesium and its alloys.

12. (a) Explain Annealing, Tempering and Hardening.

Or

(b) Explain the types and causes of corrosion.

13. (a) Explain glue and gluing.

Or

(b) Explain the riveting procedure.

14. (a) Explain FRPG.

Or

(b) Explain Graphite fibres and anamide fibres.

15. (a) Write notes on tensile test.

Or

(b) Explain Boroscope inspection.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the properties of Aluminium and its alloys.

Or

(b) Write brief notes on heat treatment of ferrous metals.

17. (a) Write notes on uses of woods in aircraft construction.

Or

(b) Explain the Honey comb construction of composite materials.

18. (a) Explain Brinnell hardness test.

Or

(b) Write notes on Eddy current inspection.

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C–0061

Sub. Code
11851

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Aeronautical Science

AIRCRAFT RULES AND AIRWORTHINESS REGULATIONS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Explain :
   (a) Aerodrome reference point
   (b) Air Traffic Services

2. Define :
   (a) Aerial work (c) Air Traffic Controller
   (b) Air Traffic (d) Aerodrome

3. What are the different sections of Civil Aviation Requirements (CAR)?

4. Write A130 Training procedures and Quality system of CARI47.

5. Define
   (a) Accountable Manager.
   (b) Approved Organization.

6. Explain :

   (a) Aircraft Goods

   (b) Certificate of Approval.

7. Define :

   (a) Aircraft Component

   (b) Defect in an Aircraft.

8. What do you mean by

   (a) Major defect?

   (b) Maintenance.

9. What is the purpose of giving special Flight permit for a aircraft?

10. What are the instruments or equipments to be fitted in aircraft when operated in accordance with Visual Flight Rules (VFR)?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) What are the powers of central government to make order in emergency as per Aircraft Act 1934?

Or

(b) What are the types of Log Books used in Aircrafts? Explain any two.

12. (a) Write the procedure for change of ownership of aircraft.

Or

(b) Under what are the occasions a Certificate of Registration may be cancelled?

13. (a) Under what conditions the Certificate of Airworthiness shall remain valid?

Or

(b) Write down the conditions for Import of aircraft under Indian registration.

14. (a) Under what occasions the Certificate of Airworthiness is likely to get suspended or cancelled?

Or

(b) Write short noted on A105 personnel Requirements for an organization as per CAR147.

15. (a) What are the requirements of medical supplies for Indian registered aircraft as per the passenger's capacity?

Or

(b) Explain

(i) Maintenance of Test Equipment.

(ii) Calibration of test equipment

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) What is the procedure and Documents required for registration of aircraft?

Or

(b) What are the procedures to be followed for grant of approval to Organization?

17. (a) Write down the steps and procedure to be followed to install a new radio Equipment on aircraft or existing avionic installation is required to be replaced.

Or

(b) What are the procedures for defect recording, reporting, and investigation and analysis?

18. (a) What are the documents to be carried onboard by Indian Registered Aircraft?

Or

(b) What are the special precautions to be taken in the fueling zone?

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C–0062

Sub. Code
11852

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Aeronautical Science

PISTON ENGINE AND PROPELLER

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Differentiate between Charles law and Boyle's law.

2. Define Backfiring.

3. What is the function of piston rings?

4. How engine cooling is done?

5. How the carburetor icing is prevented?

6. What are the major components of Lubricating System?

7. What is the working principle of Spark Plug?

8. What is an Overrunning Clutch?

9. Define Pitch Angle.

10. Define Propeller Efficiency.

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Write short notes on:

(i) Volumetric Efficiency.

(ii) Thermal Efficiency and

(iii) Mechanical Efficiency.

Or

(b) Explain Valve timing with the help of valve timing diagram. Also explain Backfiring, Valve overlap and valve lead

12. (a) Write short notes:

(i) Crank pin,

(ii) Connecting rod,

(iii) Piston pin.

Or

(b) Compare the working principles of Turbocharger and Supercharger.

13. (a) What are the characteristics of Aviation gasoline?

Or

(b) What are the components of Wet sump lubrication system?

14. (a) List out the various types of Magnetos and its characteristics.

Or

(b) Explain the working principle of Spark plug.

15. (a) Write briefly about Propeller Torque Reaction and P-Factor.

Or

(b) Classify and explain briefly about the different types of propellers based on pitch changing mechanism?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Classify the various types of piston engines according to the cylinder arrangement and number of strokes?

Or

(b) What are the various types of crankshafts and its parts? State the importance of counterweight and dynamic dampers.

17. (a) Explain the working of Float type carburetor with a neat sketch. State the methods to prevent the carb ice.

Or

(b) Explain the principle and operation of Engine Starter motor and overrunning clutch mechanism.

18. (a) Describe the construction of wooden and composite blade propellers.

Or

(b) Explain the operation of Two-stroke cycle of petrol engine with a neat sketch.

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C–0063

Sub. Code
11853

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Aeronautical Science

GAS TURBINE ENGINE

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Describe efficiency of an engine.

2. State the advantages of centrifugal compressor.

3. Define compression ratio.

4. How compressor stall can be eliminated?

5. State the different types of turbine blades.

6. Describe noise. What is the unit for noise?

7. Write a short note on relief valve in fuel system.

8. What is the purpose of fuel Spray nozzle?

9. What are the different types of propeller?

10. What is glow plug Ignition?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Describe the rocket propulsion.

Or

(b) Describe the advantages and disadvantages of Gas turbine over piston engine.

12. (a) Write a note on axial flow compressor.

Or

(b) Describe Air Inlet duct.

13. (a) Describe Thrust reversers.

Or

(b) Describe variable area exhaust Nozzle.

14. (a) Describe various forces acting on the Propeller.

Or

(b) Explain FADEC in detail.

15. (a) Describe the properties and Characteristics of Engine Lubricating oil.

Or

(b) Explain the ignition system and its operation.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe various types of Turbine Engine.

Or

(b) What is thrust? Describe various factors affecting the thrust of Gas turbine engine.

17. (a) Describe Noise Reduction System.

Or

(b) Describe briefly the function of the turbine nozzle diaphragm (Turbine inlet guide vanes) and method of nozzle vane cooling.

18. (a) Describe Air Turbine with schematic diagram.

Or

(b) Explain the forces acting on propeller.

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C–0064

Sub. Code
11854

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Aeronautical Science

AIRCRAFT ELECTRICAL SYSTEM

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the differences between fuse and circuit breaker?

2. What is solenoid?

3. What is the purpose of constant speed drive system?

4. What is thermal runway?

5. What are the different types of Battery charging?

6. Write the purpose of anti-collision lights.

7. What is the purpose of expander?

8. Describe commutator.

9. What is inverter?

10. What are the conditions to be considered when choosing aircraft wire?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain hydrometer test.

Or

(b) Explain the operation of Vent cap.

12. (a) Explain operation of reverse current cutout relay.

Or

(b) Explain constant current charging.

13. (a) Discuss the classifications of dc generator.

Or

(b) Discuss about crimped connections.

14. (a) Discuss about bonding and shielding.

Or

(b) Draw a diagram of relay and explain.

15. (a) Explain the operation of current limiter of generator.

Or

(b) Explain starter generator.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain theory of Nickel Cadmium battery.

Or

(b) Explain construction of Lead Acid battery.

17. (a) Explain armature reaction.

Or

(b) Draw a diagram of equalizing circuit and explain.

18. (a) Explain constant speed drive system.

Or

(b) Explain the operation of vibrator-type voltage regulator.

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C–0065

Sub. Code
11855

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Aeronautical Science

INDUSTRIAL MANAGEMENT

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Management.
2. Define strategic planning.
3. Is management a profession? Explain.
4. Define coordination.
5. Write the meaning and the definition of Decision making.
6. Write the emotional barriers of communication.
7. Explain about office management.
8. What is called production management?
9. Define Inventory control.
10. Write a note on work study.

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) What are the different managerial functions.

Or

(b) Define modern trends in management.

12. (a) Define the concept of power and authority.

Or

(b) Write about the advantage of manpower forecasting.

13. (a) What are the processes of decision making?

Or

(b) Define the process of communication.

14. (a) What are the ways to manage the time and their techniques?

Or

(b) Write the Principle and purpose of records.

15. (a) Define the objectives and benefits of inventory control.

Or

(b) Define Ergonomics, and design relation in work posture.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the structures of organization.

Or

(b) Define management by objectives, its objectives, advantage and disadvantages.

17. (a) Define recruitment, procedure and its sources.

Or

(b) Write the Herzberg and Alderfers ERG theories.

18. (a) Write the steps involved in production planning.

Or

(b) Define Inventory control techniques.

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C–0066

Sub. Code
11861

B.Sc. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Aeronautical Science

AIRCRAFT MAINTENANCE, GROUND HANDLING AND SUPPORT EQUIPMENTS

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Major Maintenance.

2. What is the purpose of progressive inspection?

3. Why it is necessary to bleed the brake system after maintenance of it?

4. When you need to replace a rubber shock cord?

5. Describe 'Bumbing' operation.

6. What precautions to be observed while use the pneumatic gun?

7. Describe the elements of Fire.

8. Why a signal man is required when aircraft is taxing?

9. How GPUs are parked near the aircraft?

10. Write short note on pre–oiling Equipment.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a note on Annual inspection.

Or

(b) Describe Maintenance Records.

12. (a) Briefly explain the inspections on Landing gear Strut assembly.

Or

(b) What you understand by Retraction test? What all occasion it to be done?

13. (a) Briefly explain Pneumatic riveting procedure.

Or

(b) Describe rivet failure and removing the damaged rivets.

14. (a) Briefly explain the multi engine airplane tying procedure.

Or

(b) Briefly explain types of Fire and extinguishing agents used for it.

15. (a) Describe the Tow bar Maintenance.

Or

(b) Briefly explain aircraft jacks.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain about the continuous Airworthiness inspection program.

Or

(b) Describe the inspection done on aircraft Brake unit.

17. (a) Describe the special inspection s done on aircraft landing gear after heavy landing.

Or

(b) Classification of aircraft structural damage.

18. (a) Explain the Aircraft fueling and safety precautions.

Or

(b) Explain the operating procedure and maintenance of Air start unit (ASU).

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C–0067

Sub. Code
11862

B.Sc. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Aeronautical Science

AERO ENGINE MAINTENANCE

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define overhaul.

2. What are the checks carried out on engine crank casing?

3. Why propeller balancing is required?

4. Enumerate checks / inspections carried out on wooden propeller.

5. What is the function of carburetor?

6. What is 'Hung start'?

7. Define preheating of an engine.

8. How will you assess the engine performance?

9. How engine fire if prevented during Starting?

10. What is Boroscopic inspection?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain how engine parts are structurally inspected by Magnetic particle testing.

Or

(b) Describe the genetal overhaul procedure of reciprocating Engine.

12. (a) Briefly explain about permissible repairs on wooden propellers.

Or

(b) Explain about propeller Track.

13. (a) Explain shut down procedure of any type of reciprocating engine.

Or

(b) Describe internal conditions checking of engine.

14. (a) Explain the hot section inspection of gas turbine engine.

Or

(b) Explain about fuel spray nozzle testing procedure.

15. (a) Describe about Dry motoring and wet motoring check.

Or

(b) What is the role of EGT indicator? Explain any one type of EGT operational procedure and inspection.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the assembling process of crank case in a reciprocating engine.

Or

(b) What is the purpose of propeller balancing? Describe the procedure of dynamic balancing of propeller.

17. (a) Describe about the acceleration and deceleration check procedure of piston engine.

Or

(b) Describe the non-routine inspections of gas turbine engine.

18. (a) Explain about the compressor wash procedure.

Or

(b) Describe the procedure for full throttle operation checks and assessment of Engine performance.

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C–0068

Sub. Code
11863

B.Sc. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Aeronautical Science

AIRCRAFT COMMUNICATION AND NAVIGATION SYSTEM

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the functions of Antenna coupler?

2. What are the different types of microphones used in the aircraft?

3. What is ARINC?

4. What is the purpose of Selcal Decoder?

5. What is audio control system?

6. What is GPWS?

7. Whit are the functions of Duplexer?

8. What is Radome?

9. What are the different types of antenna used in aircraft?

10. What is accelerometer?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Draw a diagram of band-pass filter and explain.

Or

(b) Explain the operation of speaker with the help of a diagram.

12. (a) Explain the operation of carbon microphone.

Or

(b) Explain the operation of a transmitter.

13. (a) Explain the operation of PPI.

Or

(b) Describe Flat-Plate Antenna.

14. (a) Explain the antenna of VOR transmitter.

Or

(b) Explain the operation of Doppler radar.

15. (a) Describe radio magnetic indicator.

Or

(b) Explain the characteristic of loop antenna.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Draw the block diagram of analog radar and explain.

Or

(b) What are the procedures to be followed for installation of radio equipment?

17. (a) Describe transmitter of VHF communication system with a help Diagram.

Or

(b) Explain Satellite communication system.

18. (a) Explain the operation of Microwave Landing system.

Or

(b) Draw a block diagram of superheterodyne receiver and explain.

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C–0069

Sub. Code
11864

B.Sc. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Aeronautical Science

AIRPORT AND AIR TRAFFIC SERVICES

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Apron.

2. What is called green field airport?

3. What is stop way?

4. What is load classification number?

5. What are the goods prohibited for carriage by air?

6. What is an 'X-ray' unit and its purpose in an Aircraft?

7. What is the function of briefing center?

8. What is approach lights? Why it is installed in an airport?

9. What is aerodrome beacon?

10. List out the airport markings.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Narrate the principles of airport lay out with a neat sketch.

Or

(b) Explain DGCA function, roles and responsibilities.

12. (a) Briefly explain flight plan and its content.

Or

(b) Explain runway markings and Taxiway markings with neat diagram.

13. (a) Describe the terminal passenger flow in detail.

Or

(b) Describe the terminal configuration in detail.

14. (a) Describe the Taxiway lighting system in detail.

Or

(b) Describe Runway lighting system.

15. (a) Describe about visual flight rule (VFR) and instruments flight rules (IFR).

Or

(b) Describe the operation of marker beacon and ILS.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain ICAO and its functions.

Or

(b) Explain the environmental factors to be considered with respect to Airport operation.

17. (a) Narrate various sources of Airport Revenue.

Or

(b) Describe in detail various systems employed in airport security.

18. (a) Explain VASI and PAPI with neat sketch.

Or

(b) Describe the role of Metrology in aviation.

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C–0070

Sub. Code
11865

B.Sc. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Aeronautical Science

TRAVEL AND TOUR MANAGEMENT

(2016 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Tourism?
2. When and where did Thomas Cook company started?
3. What is FIT's?
4. Write the Type of itinerary.
5. What is Travel insurance?
6. The term "MICE" refers to?
7. Write the expansion of UFTAA and IATO.
8. Mention the types tour packages.
9. What is Retail travel agency business?
10. Write the components of Tourism.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the types of Tour Operations.

Or

(b) Write a short note on sales distribution system.

12. (a) Explain the Diversification of Business.

Or

(b) Write a note about American Express Company.

13. (a) Write a short note on group tour planning and components.

Or

(b) Explain the roles and functions of WTTC and TAAI.

14. (a) Explain the itinerary planning and development.

Or

(b) Explain the sources of income of Travel agency.

15. (a) Explain the Tour Formulation and Designing process.

Or

(b) What are the Do's and Dont's of Itinerary preparation?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write an essay about travel agency and tour operation business.

Or

(b) Explain the roles and responsibility of travel trade associations.

17. (a) Explain the types and components of tour packages.

Or

(b) Explain about Linkages and integration with the principal service providers.

18. (a) Write an essay about resources and steps for itinerary planning.

Or

(b) Write an essay about setting up a full fledged Travel agency.

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C–0071

Sub. Code
11812

B.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Aeronautical Science

MATHEMATICS — I

(Upto – 2015 batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer any **five** questions.

1. Find the eigen values of the matrix $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$.

2. Find the direction cosines of the line joining the points $(4, 3, -5)$ and $(-2,1, -8)$.

3. Find the equation of the tangent planes to the sphere $x^2 + y^2 + z^2 - 2x - 4y - 6z - 2 = 0$ which are parallel to the planes $2x - y + 2z + 1 = 0$.

4. Find the radius of curvature for the curve $\sqrt{x} + \sqrt{y} = 1$ at $\left(\frac{1}{4}, \frac{1}{4}\right)$.

5. Find the envelope of $y = mx + \sqrt{a^2 m^2 + b^2}$. where is the parameter.

6. If $u = f(y-z, z-x, x-y)$, prove that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$.

7. If $x=r\cos\theta,\ y=r\sin\theta$, find $\frac{\partial(x, y)}{\partial(\gamma, \theta)}$.

8. Solve : $(D^2-4D+13)\,y = e^{2x}$.

Part B (5 × 12 = 60)

Answer **all** questions.

9. (a) Verify Cayley – Hamilton theorem for the matrix

$$A=\begin{bmatrix}2 & 1 & 1\\ 0 & 1 & 0\\ 1 & 1 & 2\end{bmatrix}.$$

Or

(b) Diagonalise the matrix $A = \begin{bmatrix}2 & 2 & 1\\ 1 & 3 & 1\\ 1 & 2 & 2\end{bmatrix}$ by orthogonal transformation.

10. (a) Find the equation to the plane containing the line

$\frac{x-1}{3}=\frac{y-1}{4}=\frac{z-2}{2}$ and parallel to the line

$x-2y+3z-4=0 = 2x-3y+4z-5$.

Or

(b) Find the equation of the sphere having its centre on the plane $4x-5y-z=3$ and passing through the circles

$x^2+y+z^2-2x-3y+4z+8=0$,

$x^2+y^2+z^2+4x+5y-6z+2=0$.

11. (a) Find the chord of curvature through the pole of the curve $r^n = a^n \cos n\theta$.

Or

(b) Find the evolute of the ellips $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

12. (a) If $r^2 = x^2 + y^2$ then show that

$$\frac{\partial^2 r}{\partial x^2} + \frac{\partial^2 r}{\partial y^2} = \frac{1}{r}\left[\left(\frac{\partial r}{\partial x}\right)^2 + \left(\frac{\partial r}{\partial y}\right)^2\right].$$

Or

(b) Investigate the maxima of the function

$f(x, y) = x^3 y^2 (1 - x - y)$.

13. (a) Solve : $(D^2 - 2D + 11)y = \sin x$.

Or

(b) Solve : $\frac{d^2y}{dx^2} - 2\frac{dy}{dx}$.

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C–0072

Sub. Code
11814

B.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Aeronautical Science

ENGINEERING MECHANICS AND STRENGTH OF MATERIALS

(Upto – 2015 batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer any **five** questions.

1. Define statics and dynamics.

2. What are the resolution of forces on the system?

3. Define simple harmonic motion.

4. Define free and forced vibrations.

5. Define centroid and centre of gravity.

6. Define equivalent forces.

7. What are the types of load?

8. Define couple lever arm principle.

Part B (5 × 12 = 60)

Answer **all** questions.

9. (a) Explain the principle of virtual law work.

Or

(b) Define the following:

(i) Mechanics (ii) Statics

(iii) Dynamics (iv) Kinetics

(v) Kinematics.

10. (a) Derive the equation of moment of Inertia of bodies.

Or

(b) What are the equivalent forces acting on moving object?

11. (a) Define angle of friction and coefficient of friction.

Or

(b) What are journal bearing and thrust bearing?

12. (a) What are cantilever trusses?

Or

(b) Explain resolution of force using method of joints.

13. (a) Explain the relationship between stress and strain.

Or

(b) Explain

(i) Hooke's law

(ii) Poisson's ratio

(iii) Volumetric strain.

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C–0073

Sub. Code
11821

B.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Aeronautical Science

MATHEMATICS — II

(Upto 2015 batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer any **five** questions.

1. Evaluate $\int_1^2 \int_0^1 (x^2 + y^2)\, dx\, dy$.

2. When $\varphi = x^3 + y^3 + z^3 - 3xyz$, find $\nabla\phi$ and $\nabla \times \nabla\phi$ at the point $(1, 2, 3)$.

3. Find the work done by the force $\bar{f} = 3xy\bar{i} - y^2\bar{j}$, when if moves a particle along the curve $y = 2x^2$ in the $xy-$plane from $(0, 0)$ to $(1, 2)$.

4. Show that $u + iv = \frac{x - iy}{x - iy + a} (a \neq 0)$ is not an analytic function of z, whereas $u - iv$ is such a function at all points where $z \neq -a$.

5. Examine the analyticity of the function $f(z) = \dfrac{z}{z^2 - 1}$.

6. Evaluate $\int_C \dfrac{z+2}{z} dz$ where C is the semi circle $|z| = 2$ in the upper half of the *Z*-plane.

7. Find $L\left[\left(t^3 + 3e^{2t} - 5\sin 3t\right)e^{-t}\right]$.

8. Find $L^{-1}\left[\dfrac{se^{-s}}{(s-3)^5}\right]$.

Part B (5 × 12 = 60)

Answer **all** questions.

9. (a) Change the order of integration in $\int_0^a \int_y^a \dfrac{x}{\sqrt{x^2 + y^2}} dx\, dy$ and then evaluate it.

Or

(b) By transforming into cylindrical Co-ordinates, evaluate the integral $\iiint (x^2 + y^2 + z^2)\, dx\, dy\, dz$ taken over the region of space defined by $x^2 + y^2 \le 1,\ 0 \le z \le 1$.

10. (a) Verify Green's theorem in a place with respect to $\int_C \left[\left(x^2 - y^2\right)dx + 2xy\, dy\right]$ where C is the boundary of the rectangle in the xoy - plane bounded by the lines $x = 0, x = a, y = 0$ and $y = b$.

Or

(b) Verify Gauss divergence theorem for $\bar{f} = (x^2 - yz)\bar{i} + (y^2 - zx)\bar{j} + (z^2 - xy)\bar{k}$ and the closed surface of the rectangular parallelopiped formed by $x = 0, x = 1$, $y = 0, y = 2, z = 0$ and $z = 3$.

11. (a) Show that an analytic function with

(i) constant modulus is a constant and

(ii) constant real part is a constant.

Or

(b) Determine the analytic function $f(z) = u + iv$, given that $u - v = \dfrac{\cos x + \sin x - e^{-y}}{2\cos x - e^{y} - e^{-y}}$ and $f\left(\dfrac{\pi}{2}\right) = 0$.

12. (a) Evaluate $\int_C \dfrac{z+4}{z^2+2z+5}dz$, where C is the circle $|z+1+i| = 2$ using Cauchy's integral formula.

Or

(b) Evaluate $\int_{-\infty}^{\infty} \dfrac{x^2 dx}{(x^2+a^2)(x^2+b^2)}$, using contour integration, when $a > b > 0$.

13. (a) Find the Laplace transform of

(i) $te^{-2t}\sin 3t$,

(ii) $te^{-2t}\sinh 3t$ and

(iii) $t\cosh t\cos t$.

Or

(b) Solve $y''-4y'+8y = e^{2t}$, $y(0) = 2$ and $y'(0) = -2$.

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C–0074

Sub. Code
11833

B.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Aeronautical Science

AIRCRAFT STRUCTURES

(Upto 2015 batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer any **five** questions.

1. Write short notes on semi-monocoque fuselage construction.

2. Name various brake systems used in aircraft and write briefly on antiskid system.

3. Write short note on spoilers and speed brakes.

4. Define 'Zero fuel weight', 'Empty weight' and 'Tare weight'.

5. Write short notes on 'trim tabs' and 'balance tabs'.

6. Under what occasions aircraft fixed surface alignment checks is carried out?

7. Name various flaps and its uses.

8. Write short notes on power assisted controls.

Part B (5 × 12 = 60)

Answer **all** questions.

9. (a) Explain with sketches, various stresses acting on aircraft structure.

Or

(b) Explain principle of operation of oleo pneumatic shock absorber.

10. (a) Explain anti skid system operation.

Or

(b) Explain undercarriage retraction and extension system.

11. (a) Write advantages of composite materials used in aircraft.

Or

(b) Explain Nose wheel steering system operation.

12. (a) Explain segmented Disk brake unit construction and operation.

Or

(b) Explain two methods of brake bleeding with sketch.

13. (a) Explain the weighing procedure of an aircraft with equipment required for the same.

Or

(b) Explain control system components and its purpose such as push pull rod, cable, etc.

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C–0075

Sub. Code
11834

B.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Aeronautical Science

AIRCRAFT SYSTEMS

(Upto 2015 batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer any **five** questions.

1. What is the purpose of relief valve in aircraft Hydraulic system?

2. Name five basic requirements for cabin pressurization and air-conditioning system.

3. List down the methods used for control of ice formation in aircraft.

4. What is vapor lock in aircraft fuel system?

5. What is the purpose of booster pump in fuel system?

6. Why fuel jettison is done?

7. List out the requirement of a fuel system.

8. What types of systems are employed in wind shield rain/ water removal?

Part B (5 × 12 = 60)

Answer **all** questions.

9. (a) What are the purpose of hydraulic reservoir and explain in detail?

Or

(b) How will you ensure the fuel is not contaminating during the maintenance?

10. (a) What are the sources of pneumatic supply?

Or

(b) Explain briefly any four aircraft pneumatic system components with neat sketch.

11. (a) Explain different heating systems used in air-conditioning system.

Or

(b) Explain components of air distribution system of cabin pressurization and explain the air duct.

12. (a) Explain wind shield rain repellent system.

Or

(b) Explain different methods of thermal ani-icing system.

13. (a) What is single point fueling and explain in detail?

Or

(b) Explain the light airplane pressure feed fuel system.

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C–0076

Sub. Code
11843

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Aeronautical Science

AIRCRAFT INSTRUMENTS

(Upto 2015 Batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer any **five** questions.

1. Define the term 'Earth rate'.
2. What is Mach number?
3. What is anoxia in oxygen system?
4. Define ISA.
5. What are the Q code setting of an altimeter and its indications?
6. Write the role of Wheatstone bridge system.
7. What is SEEBECK'S effect?
8. What is Radio Magnetic Indicator?

Part B (5 × 12 = 60)

Answer **all** questions.

9. (a) Briefly explain the quantitative display of aircraft instruments.

Or

(b) List out the procedures of oxygen system installations.

10. (a) Describe about the altimeter construction and operation details.

Or

(b) Briefly explain the basic principles and construction details of air speed indicator.

11. (a) Explain about the methods of operating gyroscopic flight instruments.

Or

(b) Explain about the determining the direction of precession of gyroscope.

12. (a) Explain about the measurement of fuel quantity by weight of fuel.

Or

(b) Describe the principle add operation of Exhaust Gas Temperature Indicator.

13. (a) Explain the constructional features of 'Direct Reading' compass.

Or

(b) State the occasions to perform compass calibration and selection of a compass base for calibration.

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C–0077	Sub. Code
	11853

B.Sc. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Aeronautical Science

AERO ENGINE MAINTENANCE

(Up to 2015 Batch)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 3 = 15)

Answer **any five** questions.

1. What is crankcase and state its functions?

2. What is the significance of dimensional checks of engine parts?

3. Define propeller track check and its importance.

4. Details of function of propeller governor.

5. List out the vital parameters required to be observed during engine run up (Reciprocating engine).

6. List out the safety precautions observed before engine run up.

7. What is the significance of 'Boroscopic Inspection'?

8. Define 'Hot start', Hung Start and 'Flight cycle' of jet engine.

Part B (5 × 12 = 60)

Answer **all** questions, choosing either (a) or (b).

9. (a) Explain general overhaul procedure of reciprocating engines.

Or

(b) Explain the wear, tear and dimensional checks carried out on different engine parts.

10. (a) Explain general inspection and repair carried out on wooden and metal propeller.

Or

(b) Explain

(i) Static and Dynamic balancing of propeller.

(ii) Track checking procedure of propeller.

11. (a) Explain in detail procedure of :

(i) Starting of piston engines.

(ii) Acceleration and Deceleration checks.

(iii) Ignition checks of Magnetos.

(iv) Shut down of engine.

Or

(b) Explain the pitch change mechanism of constant speed propeller during different phase of flight.

12. (a) Give detail description of inspection carried out on gas turbine engine after FOD.

Or

(b) Explain procedure of

(i) Compressor wash.

(ii) Turbine blade wash.

13. (a) Give detail description of full performance check on Turbine engines during engine run.

Or

(b) Explain procedure of (turbine engine)

(i) Overheat inspection.

(ii) Over speed inspection.
