Sl. No.:

QUESTION BOOKLET

Booklet Id.: AAO/02/A/400

Roll No.			

Time Allowed: 2 hrs 30 mins

Total Marks:150

DO NOT OPEN THE OUESTION BOOKLET UNTIL YOU ARE ASKED TO DO SO

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATE

- 1) You are required to write your Roll Number in the prescribed place provided at the top of this Question Booklet and the OMR Answer Sheet.
- 2) You are required to mention the Question Booklet Id. as mentioned above in your OMR Answer Sheet.
- 3) Please ensure that the Question Booklet has the required number of pages immediately after opening the same. In case there is any shortage of any page(s), please report the same to the invigilator.
- 4) This Question Booklet contains 150 multiple choice questions to be answered in a separate OMR Answer Sheet by using **Blue/Black ball pen** only. Do not use **Ink/Gel pen**.

The Booklet comprises of the following two parts:

Part A: General Mathematics : 50 questions
Part B: (i) Accountancy : 100 questions
(ii) Statistics : 100 questions
(iii) Mathematics : 100 questions

- ➤ Part A (General Mathematics) is compulsory for all candidates.
- ➤ Part B (Accountancy/Statistics/Mathematics): The candidates are required to answer any one subject area in Part B. Further, you need to mention about the subject area in your OMR Answer Sheet against the subject space.
- ➤ All questions are compulsory and carry equal marks.
- > There is no negative marking for wrong answers.
- > Directions for answering the questions:

Each question is followed by four alternative suggested answers. You are required to select the correct answer and darken the appropriate circle of a, b, c and d by Blue/ Black ball pen in such a manner that the circle is completely darkened.

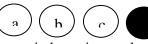
Example: Question No.63

Given below are four odd words, three are alike in some way and one is different. Find the odd word:

- (a) Ganga
- (b) Brahmaputra
- (c) Jamuna
- (d) Himalaya

Here the correct answer is Himalaya, i.e., (d). So, in the OMR Answer Sheet the darkened circle should be marked as

63.



- 5) In any case, if more than one circle against each question is darkened, that particular question would be treated as invalid and will not be evaluated.
 - At the end of the examination, the candidate should ensure that he/ she submits the OMR Answer Sheet and the Question Booklet to the invigilator before leaving the examination hall/ room.
- 6) This Question Booklet cannot be carried with you. You have to submit this along with your OMR Answer Sheet to the invigilator.
- 7) No rough work is to be done on the OMR Answer Sheet. You can do the rough work on the space provided on the Question Booklet.
- 8) Use and possession of mobile phones and electronic gadgets/calculators are strictly prohibited inside examination hall/room.
- 9) Non compliance with any of the above instructions will make a candidate liable to action/ penalty as may be deemed fit.

Space for Rough Work

PART A: GENERAL MATHEMATICS

1.	If A =[5,6,7] and B=[7,8	,9]then A U B is equal to	:	
	(a) [5,6,7,8,9]	b) [5,6,7]	c) [7,8,9]	d) [7]
2.	In 2 nd quadrant?			
	(a) x>0, y<0	b) x<0, y<0	c) x>0, y>0	d) x<0, y>0
3.	The intersection of sets	s A and B is expressed as	:	
	(a) AUB	b) A/B	c) A∩B	d)AXB
4.	Empty set is a :			
	a) Invalid set	b) Finite set	c)Infinite set	d) None of above
	$ \frac{x}{y} = \frac{3}{2} \text{then } \frac{2x+3}{6x+3} $	<u>3y</u>		
5.	If $y = 2$ then $6x + 1$			
	4	3 b) 7	9	7
	(a) 9	•	c) 7	d) 17
6.	If salary of Ram is 25% of Ram in percentage is		Shyam, then the salary o	f Shyam is less than the salary
	(a) 10%	b) 15%	c) 20%	d) 25%
7.	Four angles of a quadri	lateral are in the ratio 1	: 2 : 3 : 4. Find them.	
	(a) 36°, 72°, 108°, 144°		b) 35°, 70°, 105°, 140°	
	c) 40° , 80° , 120° , 160°		d) 25°, 50°, 75°, 100°	
8.		ng the centre to any poin		of the circle.
		into three equal arcs, ea which is twice as long a		of the circle
	d) A circle is a plane fi	_	s its radius, is a diameter	of the circle
9.	_	nd 6 black balls. A ball is t	aken out of the bag at ra	andom. Find the probability of
	getting of black ball. (a) 3/5	b) 5/3	c) 3/7	d) 2/5
10.	The condition that the	equation ax + by + c = 0	represent a linear equati	on in two variables is
	(a) $a \neq 0, b = 0$	b) $b \neq 0$, $a = 0$	c) a = 0, b = 0	d) a ≠ 0, b ≠ 0
11.	The graph of the linear	r equation $2x + 3y = 9$ cut	ts y-axis at the point:	
	(a) 9/2,0	b) (0, 9)	c) (0, 3)	d) (3,1)
12.	Find the value of x from	$_{1} log_{x}^{81} = -4$		
	(a) 3	b) – 3	c) 1/3	d) 4
13.	Zero s of the quadratic	polynomial $4u^2 + 8u$	are	
	(a) 0, -2	b) 2, -2	c) 0, 2	d) 1, 0
14.	The product of two cor	nsecutive positive intege	rs is 306. What are the ir	itegers?
	a) 16, 17	b) 17, 18	c) 18, 19	d) 19, 20
15.	Write first four terms of follows $a = -1 d = \frac{1}{2}$	of the A.P. when the first	term a and the common	difference <i>d</i> are given as
		b) -1, ½1/2 and 1	c) -1, -1/2, 0 and 1/2	d) 1, -1/2, 1 and 0

16.	All circles are : a) Congruent c) neither congruent ne	or similar	b) Both Congruent and d) similar	similar
17.	In \triangle ABC right angled at a) 24/25, 7/25	B, AB = 24 cm, BC = 7 m. Determ b) 8/25, 24/25	nine sin A, cos A c) 8/25, 7/ 25	d) 7/25, 24/25
18.	If an AP has $a=1$, $t_n = 20$ a) 20	and S_n =399 then value of n is: b) 32	c) 38	d) 40
19.	In terms of powers of p a) $2^2 \times 3 \times 5^2$	rime numbers, 1260 can be write b) $2^2 \times 3^2 \times 5 \times 7$	ten as: c) $2 \times 3^2 \times 5^2 \times 7$	d) $2^2 \times 3 \times 5 \times 7^2$
20.	0.35% expressed as a d a) 0.35	ecimal, is equal to : b) 0.035	c) 0.0035	d) 3.5
21.	The product of $(2 x - 3 a)$ $2x^2 - 3$)and $(2 x + 3)$ is: b) $4x^2 - 3$	c) $4x^2 - 9$	d) 4x ² + 9
22.	In a frequency distribut a) 5	ion, the class mark of a class is 1 b) 7.5	0 and its width is 5. The c) 10	lower limit of class is: d) 12.5
23.	is a collection of we a) Set	ell defined and distant objects b) Conjugate	c) Power	d) Relation
24.	Additive inverse of "0" a) 1	is b) -1	c) 0	d) 2
25.	Find the distance betw a) $3\sqrt{3}$	een the points (2, 3), and (4, 1): b) $2\sqrt{2}$	c) 2√3	d) 3√2
26.	$3x^2y+5$ is a polynomial a) one	of degree b) two	c) three	d) zero
27.	Factors of $x^2 - 5x + 6$ and a) $(x+6)(x+1)$	re b) (x-2)(x+3)	c) (x+2)(x+3)	d) (x+1)(x-6)
28.	HFC of a^3+b^3 and a^2-ab^3 a) a^2-ab+b^2	+ b ² is b) (a+b) ³	c) (a ² +b ²)	d) (a+b)
29.	Two equations in two v	ariable which are true for the sa b) Quadratic	me ordered pair are calle c) Simultaneous	ed equations d) Radical
30.	The Cartesian coordina a) Binary	te system is also called b) Functional	c) Denary	d) Rectangular
31.	√ 2 is a nu a) Rational	mber. b) irrational	c) Prime	d) None
32.	Trivial solution of homo	ogeneous linear equation is b) (0, 1, 0)	c) (0, 0, 1)	d) (0,0,0)
33.	The general term of the a) N	e sequenced 2, 4, 6, 8, is b) 2n	c) 2n – 1	d) n²

34.	0! = ?			
	a) 1	b) 0	c) undefined	d) None
35.	ⁿ Cr in factorial form is :			
	a) n!r/(n-n)!	b) n! / r! (n-r)!	c) n!	d) n! –r / n!
36.	1 + 2 + 3 ++ (n -	1)= ?		
	a) n (n-1) /2	b) n (n+1)/2	c) (n-1)(n+1)/2	d) [n(n+1)] ² /2
37.	$(1-\cos^2\theta) (1+\cot^2\theta) = \frac{1}{2}$		2	
	a) Sin² θ	b) Cos² θ	c) Cosec² θ	d) 1
38.	$Cos (\alpha + \beta) = ?$			
	a) Sin α cos β + cos α sin	·	b) Sin α cos β - cos α sin d) cos α cos β + sin α si	•
20	c) $\cos \alpha \cos \beta - \sin \alpha \sin \alpha$		•	пр
39.	a) л/2	periodic function whose period i b) л	s: c)2л	d) 4 л
40		for the function which is:	C/ Z //	u) + /i
40.	a) One to one	b) onto	c) into	d) All of these
41		e equation 1 + Cos x = 0 is	•,•	,
	a) $\{\pi/2 + 2n\pi\}$	•	c) {π+ 2nπ}	d) None of these
42.	If a+ib= c+id, then it mu	ust be tru that		
	a) <i>a=c,</i> & <i>b=d</i>	b) <i>a= -c & b=d</i>	c) <i>a=d</i> & <i>b=c</i>	d) <i>ad=bc</i>
43.	Harmonic mean betwee	en two numbers 'a' and 'b' is		
	a) (a+b) /2	b) 2ab/(a+b)	c) √ab	d) <i>(a+b)/ab</i>
44.	If ${}^{n}C_{6} = {}^{n}C_{12}$, then n equ	uals		
	a) 18	b) 12	c) 6	d) 20
45.	The numbers of terms i	n the expansion of $(a+b)^n$ is		
	a) n	b) n+1	c) 2 ⁿ	d) 2 ⁿ – 1
46.	Any point on the line y	= x is of the form :		
	a) (a, a)	b) (0, a)	c) (a, 0)	d) (a, – a)
47.	•	e whose graph passes through th	_	
	a) $2x + 3y = 1$	b) $2x + 3y = 0$	c) $2x + 3y = 6$	d) none of these
48.	The equation of y-axis is		,	
	a) y = 0	b) x = a	c) y = a	d) $x = 0$

c) -1

c) a^2 - 4b=0

d) ½

d) b^2 - 4ab=0

49. Real part of (2+i)/i is equal to

b) 2

50. If roots of the equation $ax^2 + bx + 1 = 0$ are equal, the value of k will be...

b) b^2 - 4a=0

a) 1

a) *ab*²- 4=0

PART B: ACCOUNTANCY/STATISTICS/MATHEMATICS (ANSWER ANY ONE SUBJECT)

ACCOUNTANCY

- 4				
51.	a) (ounting Standard-3 describes : Cash Flow Statement Funds Flow Statement		c) Balance Sheet d) Income Statement
52	Inte	ernational Accounting Standard Committee was forn	ned i	in the year:
J		977		c) 1920
	•	.973		d) 1949
53	Valı	uation of Inventories is described by:		
<i>J</i> J.	a) A	•		c) AS-10
	b) A			d) AS-2
5/1	IFR	Ss are issued by:		
J 4 .	a) I	•		c) ICAI
	b) I			d) ICWA.
	•			,
55.		ounting is a language of Assets		c) Business
	-	Liabilities		d) Balance Sheet
- c	•			•
56.	vvn Indi	ich of the following organisations is not connected t	to the	e accounting Standard Setting process in
		Accounting Standard Board (ASB)		
		Institute of Chartered Accountants of India (ICAI)		
	-	Assam Industrial Development Corporation (AIDC)		
		Institute of Cost and Works Accountants of India (Id		1)
57	Dic	closure of Accounting Policies is covered by		
57.		AS 1	c)	AS 12
	•	AS 10	,	AS 20
E 0	•		,	
50.		ounting for Amalgamation is covered by AS 6	c)	AS 14
	•	AS 9	•	AS 21
	•		•	
59.		ernational Accounting Standards Board (IASB) was fo		
	-	April 1, 2012 April 1, 2001	-	April 1, 1973 April 1, 1956
	-		u,	April 1, 1990
60.		btors Ledger records	-1	Dath and it and and turn costions
	,	All credit transactions Only credit sales	c) d)	Both credit and cash transactions None of the above
	-	•	u)	Notice of the above
61.		source of information for credit sales is		
	a)	Cash Book	c)	Journal Proper
	b)	Returns Outward Book	d)	Sales Day Book
62.		d Debts previously written off, now recovered is rec		
	,	Total Debtors Account	,	Cash Book
	b)	Total Creditors Account	d)	None of the above

63.	a) b) c)	sh collected from customers is entered in Debit side of Total Debtors Account Credit side of Total Debtors Account Both Total Debtors and Total Creditors Account None of the above		
64.	a)	nder Self Balancing System, Trial Balance in prepared in Only Debtors Ledger Only Creditors Ledger	c)	Only General Ledger Each of the above three Ledgers
65.	Und a) b)	der Hire Purchase System, ownership of goods passes to After Down Payment is made After payment of the last instalment	from c) d)	seller to buyer After signing the agreement None of the above
66.	Un a) b)	nder Hire Purchase System, Down Payment includes Interest for the first instalment Interest for all the instalments	c) d)	No Interest Interest for the Cash Price
67.	a)	re Purchase Price means Total Payments to be made by the buyer including in Only Cash Price Cash Price Plus Down Payment None of the above	teres	t
68.		e Hire Purchase agreement gives the buyer the right to Immediately after signing the agreement After the last payment is made	get (c) d)	
69.	a) b) c)	ortworking means Excess of minimum rent over actual royalty Excess of actual royalty over minimum rent Difference between shortworking lapsed and short None of the above	work	ing recouped
70.	a)	e agreement in connection with 'Royalty' is subject to t Indian Companies Act, 1956 Indian Partnership Act, 1932	he pr c) d)	rovisions of the Indian Contract Act, 1972 Income Tax Act, 1961
71.	In a) b)	the books of the lessee, the 'Royalty' account is closed Profit and Loss A/c Manufacturing A/c	by tr c) d)	ransferring to Trading A/c Any of the above
72.	In a) b)	the books of the lessor, Shortworking lapsed is a Loss Gain	c) d)	Liability None of the above
73.	For a) b)	r recoupment of past Shortworking, in the books of the Landlord A/c is debited Landlord A/c is credited	e less c) d)	ee Shortworking A/c is debited None of the above.
74.		ceipts and Payments account generally starts with Closing balance of cash Closing balance of bank	c) d)	Opening balance of cash and bank Opening balance of cash and/or bank
75.	Re a) b)	ceipts and Payments account records the transactions capital nature only revenue nature only	of c) d)	both capital and revenue nature None of the above.

76.	Income and expenditure account is		
	a) Just like Balance sheet	,	Just like Cash book
	b) Just like Profit and Loss account	d)	None of the above.
77.	Life membership fee is a		
	a) Capital receipt	c)	Capital expenditure
	b) Revenue receipt	d)	None of the above
78.	Not for profit organisation prepares		
	a) Income and expenditure acount	c)	Profit and Loss account.
	b) Trading account	d)	None of the above.
79.	Income and expenditure account shows		
	a) Cash in hand	c)	Capital expenditure
	b) Cash at bank		Excess of income over expenditure.
			·
80.	Subscription received in advance is treated as		
	a) An income	c)	Capital
	b) An asset	d)	A liability.
81.	Profit on sale of old furniture of a club is shown on the		
	a) Credit side of Profit and Loss A/c		
	b) Income side of Income and Expenditure account		
	c) Both credit side and debit side of expenditure account		
	d) None of the above.		
02	The unining up a propher of results are in a figure in		
82.	The minimum number of partners in a firm is:	۵)	Ton
	a) Three b) Two	c) d)	Ten Twenty
	b) Two	uj	Iwency
83.	If the partnership deed is silent, Interest on partners' loan	is al	lowed @:
	a) 4%	c)	
	b) 6%	d)	10%
84.	When a new partner pays cash for goodwill, the amount is	cred	
	a) Premium for goodwill Account	c)	New partner's Drawings Account
	b) Partner's loan Account	d)	Investment Account
0 [On the admission of a new partner, the increase in the value	100.0	of according
65.	On the admission of a new partner, the increase in the valual a) Debited to Revaluation Account	c)	Transferred to Reserve Account
	b) Credited to Revaluation Account	d)	None of the above
	of carted to herafadion/lossant	ω,	Trone or the above
86.	Profit on revaluation of assets and liabilities is shared by th	e ol	d partners in:
	a) Sacrificing ratio		Old ratio
	b) New ratio	d)	Gaining ratio
87.	A company is :		
	a) An artificial person	c)	A Club
	b) A Natural person	d)	Non-trading organisation

88	3. Shareholders are:		
	a) Creditors of the company	c)	Officers of the company
	b) Employees of the company	d)	None of the above
		•	
80	Shares can be forfeited due to :		
0.	a) Non-payment of Bank loan	c)	Failure to attend meeting
			None of the above
	b) Non-payment of Call money	uj	Notic of the above
~			
90	O. Premium on issue of shares should be shown on the :		
	a) Asset side of the Balance Sheet	,	Credit side of the Profit & Loss Account
	b) Liability side of the Balance Sheet	d)	Debit side of the Profit & Loss Account
92	1. Profit & Loss Account is also known as:		
	a) Income & Expenditure Account	c)	Cash Flow statement
	b) Position Statement	d)	None of the above
	.,	,	
91	2. Current ratio is the relation between:		
<i>J</i> 2	a) Current Asset and fixed Asset	(۲	Current Asset and Investment
	,	,	None of the above
	b) Current Asset and Net profit	u)	None of the above
9:	3. If current ratio is 2:1 and Current assets are Rs. 5,00,000/-		
	a) Rs. 3,00,000/-	•	1,00,000/-
	b) 10,00,000/-	d)	None of the above.
94	I. AS-9 deals with:		
	a) the principle of Revenue Recognition	c)	Amalgamation of Companies
	b) Depreciation		Disclosure of Accounting Policies.
	., - op o	,	- · · · · · · · · · · · · · · · · · · ·
91	5. The difference between goods sent to branch and goods re	eceiv	ved by branch represents:
٠,	a) Cash in transit		goods lost in transit
	,	•	
	b) Cash lost in transit	u)	None of the above
•	5 A L		
96	6. Advertisement expenses are apportioned among different		_
	a) Purchases	•	Production
	b) Profits	d)	Sales.
97	7. Goodwill is :		
	a) An intangible asset	c)	A Current asset
	b) A tangible asset	d)	None of the above.
	,	•	
98	3. Super Profit is the:		
	a) Excess of normal profit over actual profit		
	b) Excess of actual profit over normal profit		
	c) Excess of gross profit over net profit	£:⊥	
	d) Excess of current year's profit over previous year's pro	ΠŢ.	
) (D. 1. (L. 1. D. 1.)		
99	9. 'Bank of Last Resort' represents :		
	a) BOI	•	UBI
	b) SBI	d)	RBI

100.	Working capital is the:		
	a) Excess of current assets over current liabilities		
	b) Excess of current liabilities over current asset		
	c) Excess of fixed assets over current liabilities		
	d) Excess of fixed assets over current assets.		
101.	Contribution is the:		_
	a) Excess of fixed assets over current assets	•	Excess of sales over current assets
	b) Excess of sales over variable cost	d)	None of the above
102	Margin of safety is the:		
102.	a) Excess B.E.P sales over actual sales	c)	Excess fixed assets over current assets
	b) Excess actual sales over B.E.P sales	d)	None of the above
	zy zkocoo dotaan sanco over bizin sanco	ω,	None of the above
103.	In absence of Partnership Deed, profits and losses of the fi	rm a	re shared by partners:
	a) in gaining ratio	c)	in capital ratio
	b) in sacrificing ratio	d)	equally
104.	If profit volume ratio is 40%, variable cost is:		
	a) 360% of sales	•	760% of sales
	b) 960% of sales	d) l	None of the above.
105	If sale price is Rs. 200/-, Variable cost is Rs.150/- and Fixed	cost	tis Rs 1 00 000/- than R F Dist
105.	a) 1,000 units		3,000 units
	b) 2,000 units	•	4,000 units.
	5) 2,000 units	uj.	+,000 units.
106.	If Subscription received Rs. 3,00,000/-, subscription outs	stand	ding for previous year Rs. 10,000/- and
	subscription outstanding for the current year is Rs. 20,00		
(credited to Income and Expenditure account is:		
	a) Rs. 3,10,000/-	c)	Rs. 3,30,000/-
	b) Rs. 3,20,000/-	d)	Rs. 3,00,000/
107.	Balance Sheet reflects:		
	a) Assets Only		
	b) Assets, Liabilities and Capital		
	c) Assets, Liabilities, Capital, income and expenses		
	d) All of the above		
108	Balance sheet provides information of financial position o	f the	anternrise:
100.	a) at a point of time		for a period of time
	b) over a period of time	-	None of the above.
	by over a period of time	uj	None of the above.
109.	Liquid assets consist of :		
	a) Current assets – Inventory	c)	All Current Assets
	b) Current Assets – Inventories – Prepaid Expenses	d)	Profitability Ratio
110	Datum on Canital is managed 11		
110.	Return on Capital is measured by: a) Acid Test Ratio	۰/ ۱	Ooht Equity Patio
	b) Activity Ratio	-	Debt-Equity Ratio Profitability Ratio
	oj Activity Natio	u) I	TOTICADIIILY NALIO

111. ROI is calculated on:	
a) Capital employed	c) Share Capital
b) Total Assets	d) None of the above.
112. Which of the following items results into an application of	fund ?
a) Payment of Dividend	c) Sale of plant
b) Issue of Share Capital	d) None of the above.
b) issue of Share Capital	d) None of the above.
113. Dividend received on shares held as investments is a cash	flow from:
a) Financing activity	c) Operating activity
b) Investing activity	d) Any of the above
114. If Selling Price per unit is Rs. 12/-, Variable cost per unit is	Rs. 9/ then Profit Volume Ratio is :
a) 33.33%	c) 75%
b) 25%	d) 125%.
5) 25/0	u) 123/0.
115. As per Income Tax Act. 1961, Previous Year starts from:	
a) 1 st April	c) 1 st January
b) 1 st March	d) 31 st March.
116. The word 'AUDIT' has been derived from the word:	
a) Audio	c) Audire
b) Audition	d) Audible.
	<i>a,</i>
117. In Auditing, Internal Check System means a system who	ereby :
a) the work of the organization is internally checked by	the Auditor
b) the work of one employee is automatically checked I	oy another employee
c) the work of the company is checked by Government	
d) the works of the employees are checked by the Man	aging Director.
118. A voucher is :	
a) a book of account	
b) a transaction	
c) a documentary evidence in support of a transaction	
d) a technique of sample survey	
a, a teelinique of sumple survey	
119. At present, all income tax related matters are regulated	
a) Income Tax Act, 1922	c) Income Tax Act, 1957
b) Income Tax Act, 1961	d) Income Tax Act, 2013.
120. Agricultural Income is fully exempt from income-tax und	der Section
a) 80 C of the Income Tax Act	c) 28 D of the Income Tax Act
b) 28 G of the Income Tax Act	d) 10(1) of the Income Tax Act
.,	, , , , , , , , , , , , , , , , , , , ,
121. Central Excise duty is an indirect tax levied by:	
a) Union Government	c) Both Union and State Governments
b) State Governments	d) None of the above.

- 122. The Customs Act, 1962 covers:
 - a) Import duties only

c) Both Import and Export duties

b) Export duties only

d) None of the above

- 123. A debenture holder is a:
 - a) Creditor of the Company
 - b) Debtor of the Company

- c) Employee of the Company
- d) None of the above

- 124. A Debenture holder gets:
 - a) Dividend from the Company
 - b) Interest from the Company
 - c) Both Dividend and Interest from the Company
 - d) None of the Above
- 125. A Company limited by shares if permitted by Articles and passed a resolution in the general meeting to this effect, can do:
 - a) Increase capital only

c) convert capital into stock only

b) consolidate capital only.

d) All of the above

- 126. A Company can reduce capital if:
 - a) only Articles of Association permits
 - b) only a special resolution has been passed to this effect
 - c) only the national company law tribunal approves it
 - d) all of the above three jointly
- 127. Reduction of capital under section 100 involves:
 - a) only reduction of unpaid call on shares
 - b) only cancellation of paid up capital of shares
 - c) only return of a part of paid up capital to its shareholders
 - d) all of them.
- 128. A company can be voluntarily wound up by members if:
 - a) the directors give a declaration of solvency
 - b) the auditors give a declaration of solvency
 - c) the creditors give consent
 - d) None of the above.
- 129. In order to be a holding company, a company must acquire:
 - a) All the equity shares
 - b) Majority of equity shares with voting rights
 - c) Power to compose the board of Directors
 - d) Any one of the above.
- 130. A consolidated Balance Sheet of a holding company must contain:
 - a) all the assets and liabilities of the subsidiary companies
 - b) proportionate assets and liabilities of the subsidiary companies
 - c) all the shares of the subsidiary companies
 - d) None of the above.

131.	The cost of control for acquiring of the shares of the sub a) Goodwill b) Capital Reserve	osidiary companies may show : c) Nil d) Any of the above
132.	A consolidated Balance Sheet is: a) Principal Balance Sheet of the holding company b) A Substitute Group Balance Sheet c) A statutory Balance Sheet d) None of the above	
133.	The transfer of an entry from journal to ledger is known a) Vouching b) Transaction	n as: c) Posting d) Auditing
134.	A Trial Balance is prepared to ascertain the: a) Arithmetical accuracy of the books of accounts b) Profit or loss of the business c) Assets and liabilities of the business d) None of the above.	
135.	Transactions are: a) Any events b) Only Monetary Events c) Both Monetary and non-monetary events d) Only non-monetary events	
136.	In case of a Paper Transaction: a) Money is to be paid later on b) Money is to be paid immediately	c) Money is not to be paid at all d) None of the above
137.	Which of the following events is not a transaction? a) Payment of children's school fees b) Receipt of income-tax refund c) Withdrawing of money from bank for personal use d) None of the above.	
138.	Net working capital is the: a) Excess of current liabilities over current assets b) Excess of current assets over current liabilities c) Excess of fixed assets over long term liabilities d) Excess of total profits over expected profits.	
139.	Margin of Safety is: a) Excess of Break-even Sales over total sales b) Excess of total sales over Break-even Sales c) Excess of maximum stock level over minimum stock level over minimum stock level over minimum stock level.	evel
140.	At Economic Order Quantity:	

a) Carrying Cost and Buying Cost are equalb) Carrying Cost is more than Buying Costc) Buying Cost is more than Carrying Cost

•	141. In case of Dissolution of a Partnership Firm, the followa) Revaluation Accountb) Realisation Account	ing Account is prepared: c) Profit & Loss Account d) Income & Expenditure Account
:	142. A & B are partners sharing profits as 2:1. C is admitted a) 4:1 b) 8:1	for 1/4ths share. The sacrificing ratio is: c) 2:1 d) None of the above
•	143. A & B are partners sharing profits as 3:2. C has been a and C is 2:1:2. The sacrificing ratio is:a) 1:1b) 3:2	admitted in the firm. The new ratio of A, B c) 1:2 d) 5:1
	 144. Test Check enables the Auditor to: a) Reduce his work burden only b) Reduce his responsibility only c) Reduce both his work burden and his responsibility d) All of the above. 	
	145. Receipts & Payments Account records:a) Cash transactions onlyb) Credit transactions only	c) Both Cash & Credit transactions d) None of the above
•	146. The Accountant of a Company forgot to record the pa donation. It is:a) Error of Principleb) Error of Commission	yment of Rs. 5,000/- made to a temple for c) Error of Duplication d) None of the above
:	147. Which of the following items does not come under the a) wagesb) pension	e head, "Income from Salaries"? c) gratuity d) None of the above
	148. Cost Inflation Index is applicable in the case of: a) Long-term Capital Gains only b) Short-term Capital Gains only c) Both Long-term and Short-term Capital Gains d) None of the above.	
	149. As per Income-tax Act, 1961, the Deduction in respect a) Section 80 C b) 80 D	of medical insurance premia comes under: c) 80 E d) 80 G.
	150. Which of the following statements is true?a) Fixed cost is fixed per unitb) Variable cost is variable per unitc) Fixed cost is fixed only in the short periodd) None of the above.	

STATISTICS

51. In	schedule method , the question	naire	e is filled by –		
a)	Respondent	b)	Enumerator		
c)	Investigator	d)	None of the above	/e	
52 Er	om a Histogram , one can find th	וב פו	nnrovimate value (of.	_
	Mean	-	Mode	UI	
,	Median	,	None of the abov		
Cj	Wedian	uj	None of the abov	ve	
53. Ar	ithmetic mean is not independe	nt of	f change of –		
a)	Origin	b)	Scale		
c)	Both (a) and (b)	d)	None of the above	ve	
54. Co	efficient of variation is a	ามฑ	her.		
	Pure		Irrational		
•	Complex number	•	None of the above	Ve	
c,	Complex number	uj	None of the above	vc	
55. β ₂	is the measure of –				
a)	Mean	b)	Skewness		
c)	Kurtosis	d)	None of the above	/e	
FC Th	and the control of th				
	e relation among μ_4 , κ_2 and κ_4 is		. 2		
•	$\kappa_4 = \mu_4$	•	$\kappa_4 = \kappa_2 + \mu_4^2$		
C)	$\mu_4 = \kappa_4 + 3\kappa_2^2$	a)	None of the above	е	
57. Th	e best measure of dispersion is -	_			
	Range		Quartile deviatio	n	
	Mean deviation	•	Standard deviation		
-,		,			
58. M	ean deviation about is the	e lea	st.		
a)	Mode	b)	Mean		
c)	Median	d)	Standard deviation	n	
E0 E0	r nacitiva akawad diatributian				
	r positive skewed distribution –			۵١	Maan + Madian + Mada
	Mean > Median > Mode				Mean < Median < Mode
D)	Mean = Median = Mode		(a)	None of the above
60. Fo	or two distinct observations, whi	ch o	f the following is c	or	rect?
a)	AM > GM > HM	b) .	AM < GM < HM		
c)	AM = GM = HM	d)	None of the above	j	
	kewness means				
	Symmetry	-	Lack of symmetry		
c)	Homogeneous	d)	None of the above	ē	

62.	The coefficient of correlation lies	between –
	a) 0 to 1	b) 0 to ∞
	c) -1 to 1	d) 0 to 2
63.	The sign of regression coefficient	
	a) Mean	b) Standard deviation
	c) Correlation coefficient	d) None of the above
64	The product of two regression co	efficients can never be greater than –
04.	a) 2	b) 0
	c) 1	d) None of the above
	c, 1	d) Notice of the above
65.	The value of β_2 is always –	
	a) 0	b) Greater than 1
	c) Less than -1	d) None of the above
66	If A and B are two mutually exhau	estive events than D(ALID) is
00.	If A and B are two mutually exhau	
	a) P(A)	b) 1
	c) 0	d) P(B)
67.	If $P(A/B) = P(A)$ then A and B are.	events.
	a) Mutually exclusive events	
	c) Independent	d) Equally likely
	c,acpenaciic	a, 14aa.,e.,
68.	If A is a certain event then P(A) is	
	a) 0	b) 2
	c) >0	d) 1
69.	If X and Y are two random va	ariables then V(X+Y) = V(X) + V(v)
05.	a) Any	b) Independent
	c) Dependent	d) None of the above
	c, Dependent	d) None of the above
70.	If A and B are two independent ev	ents then –
	a) A ^c and B ^c are also independent	
	b) A ^c and B are also independent	
	c) A and B° are also independent	
	d) All of the above	
71.	If X is a random variable, then	
	a) $E(X^2) \ge (E(X))^2$	b) $E(X^2) = E(5X)$
	c) $E(X^2) < (E(X))^2$	d) $E(X^2) = 0$
		nt units of measurement, the variation of
Dat	ta can be compared by –	1.) 5
	a) Mean	b) Range
	c) Coefficient of variation	d) Median

73.	If 'a' and 'b' are constants, then V(a)	X ± b) = ?				
	a) aV(X) ± b	b) aV(X) – b				
	c) a ² V(X)	d) None of the above				
74. If X and Y are independent random variables, then covariance(X,						
	a) 2	b) 5				
	c) 0	d) 1				
75.	Two dice are rolled together, if the put the sum of numbers on two dice is					
	a) 5/8	b) 1/2				
	c) 1/4	d) 5/36				
76.	Binomial distribution has number	er of parameters.				
	a) 3	b) 1				
	c) 2	d) 5				
77.	When p=q, then the Binomial distrib	oution will be –				
	a) Homogeneous	b) Symmetrical				
	c) Skewed	d) None of the above				
78.	Poisson distribution is –					
	a) Symmetrical	b) Positively skewed				
	c) Negatively skewed	d) None of the above				
79.	If A and B are mutually exclusive even	ents then P(AB)= ?				
	a) 1	b) 3				
	c) 2	d) 0				
80.	For normal distribution –					
	a) β ₁ =0	b) β ₂ =3				
	c) Both (a) and (b)	d) None of the above				
81.	If X~N(5,49) then the distribution of	Y=2X is –				
	a) N(10,14)	b) N(5,49)				
	c) N(10,98)	d) N(10,196)				
82.	The area under the normal curve be					
	a) 0.6826	b) 0.9544				
	c) 0.9973	d) 0.0027				
83.	If X is a random variable with mean					
	a) Variance	b) Skewness				
	c) Central moment of order r	d) None of the above				
84.	When $r = \pm 1$, two regression lines w					
	a) Perpendicular	b) Parallel				
	c) Coincide	d) None of the above				

85.	The two regression lines passes throu	ıgh t	the point –
	a) (a,b)		(mean of X,Mean of Y)
	c) (σ_x, σ_y)	d)	None of the above
86.	Goodness of fit can be tested by –		
	a) t-test	b)	F-test
	c) χ²-test	d)	Z -test
87.	For testing the equality of population	var	iances, which of the following distribution is used
	a) Normal	b)	t-distribution
	c) F-distribution	d)	None of the above
88.	The degrees of freedom for student's is:	t ba	ased on a random sample of size n
	a) n-1	b)) n-2
	c) n	ď	n-3
89.	For large sample test, the sample size	sho	ould be –
	a) 10		>30
	c) <25	d)	None of the above
90.	The probability of Type-I is called –		
	a) Null hypothesis	b)	Level of significance
	c) Critical region	d)	None of the above
91.	The probability level of correct decisions:	on i	n case of testing a null hypothesis
	a) Power	b)	Size of critical region
	c) β	d)	None of the above
92.	Which of the following is true?		
	a) 1-β<0	b)	1-β ≥ level of significance(α)
	c) $1-\beta = 2$	d)	None of the above
93.	Under the following condition Powers	=Lev	vel of significance –
	a) When alternative hypothesis beco	mes	s null hypothesis
	b) When α = β		
	c) When the error is zero		
	d) None of the above		
94.	Neyman-Pearson's lemma is used –		
	a) For unbiased test		
	b) For construction of most powerful	crit	tical region
	c) For minimax test		
	d) None of the above		

95.	The degree of freedom for χ^2 statistic in a) 4 c) 9	n case of contingency table of order of (3X3) is – b) 6 d) 12
96	Factorization theorem is related to stude a) Unbiasedness c) Sufficiency	dy the property of – b) Consistency d) None of the above
97.	Rejecting a null hypothesis H _o when H _o a) Type II error c) Both (a) and (b)	is always true is – b) Type I error d) None of the above
98	In case of efficient estimator 't', the V(t a) Maximum c) -5	b) Least d) None of the above
99	The probability of all the possible outco a) Infinity c) One	omes of a random experiment is equal to: b) Zero d) None of the above
100	. If X~N(μ , σ^2), the maximum probability a a) $\frac{1}{\sqrt{2\Pi}} e^{-1/2}$ c) $\frac{1}{\sqrt{2\Pi}\sigma} e^{-1/2}$	at the point X= μ is: b) $\frac{1}{\sqrt{2\Pi}\sigma}$ d) $\frac{1}{\sqrt{2\Pi}}$
	 Test of null hypothesis H_o: μ=70 vs. H₁: a) One sided test (left) b) One sided test(right) c) Two failed test. d) None of the above 	μ>70 leads to –
102	. The mean of chi-square distribution n ${f c}$ a) 2n c) \sqrt{n}	d.o.f is – b) n ² d) n
		nent generating function of X is given by: b) E[X ^t] d) None of the above
104	. The size of critical region under H_{o} is ca a) Power c) β	lled: b) Level of significance d) None of the above
105.	Which of following distribution possess a) Uniform c) Normal	sing the memoryless property : b) Geometric d) Gamma

106. Name the following distribution for was a) Binomialc) Poisson	vhich mean and variance are equal: b) Normal d) Exponential
107. In case of normal population, the sana) Unbiased estimatec) Most efficient	nple mean is – b) Consistent estimator d) All of the above
108. In time series, the number of comportal a) 5 c) 8	nents is – b) 10 d) 4
109. The long term effect in time series isa) Trendc) Cyclical	known as: b) Seasonal d) Irregular
110. Seasonal variation in a time series is:a) Regular movementc) Period less than one year	b) Oscillatory movement d) Both (a) and (c)
111. Method of least square to fit in the tra) Linearc) Both (a) and (b)	rend is applicable only if the trend is: b) Parabolic d) None of the above
112. If the slope of the trend line is positivea) Rising trendc) Stagnation	ve, it shows: b) Declining trend d) Any one of the above
113. Index numbers are also known as:a) Economic barometerc) Both (a) and (b)	b) Lactometer d) None of the above
114. Index numbers are generally expressa) In ratiosc) In thousands	ed as: b) In percentage d) None of the above
115. Base period for an Index number shoa) A normal periodb) Should not be too long or too shoc) Both (a) and (b)d) None of the above	
116. The ideal Index number is:a) Laspeyre's price Index numberb) Paache's price Index numberc) Fisher's price Index number	

d) None of the above

117.	Laspeyre's Index number possess: a) Downward bias c) Upward bias	b) No bias d) None of the above
118.	The condition for time reversal test a) P_{01} . V_{01} = V_{01} c) P_{01} . V_{01} = 1	to be satisfied with usual notation is: b) $P_{01} \cdot P_{10} = 1$ d) None of the above
119.	Any Index number is: a) Pure number c) Expressed in kgs	b) Expressed in rupeesd) None of the above
120.		and Paache's price Index numbers is: b) Edgeworth price Index number d) None of the above
121.	Laspeyre's Index formula uses the value a) Base year c) Both (a) and (b)	veights of the: b) Current year d) None of the above
122.	If the consumer price Index for 2019 a) 0.15 paise c) 8 paise	5 is 800, then the purchasing power of a rupee is: b) 12.5 paise d) None of the above
123.	In India, the collection of vital statis a) 1920 c) 1969	tics started for the first time in: b) 1886 d) 1946
124.	Vital statistics are obtained through a) Census operation c) Survey method	b) Registration system d) All of the above
125.	Vital rates are generally expressed i a) Percentage c) Per million	n: b) Per thousand d) None of the above
126.	The child bearing age in India is: a) 20-28 years c) 15-49 years	b) 20-29 years d) None of the above
127.	The death rate obtained for a segm a) Specific death rate c) Infant mortality rate	ent of a population is known as: b) Crude death rate d) None of the above
128.	The ratio of births to the total death a) Survival rate c) Vital Index	ns in a year is called: b) Fertility rate d) None of the above

129. The relation between NRR and GR a) NRR = $\frac{1}{GRR}$ c) NRR \leq GRR	R is: b) NRR > GRR d) None of the above
130. A complete life table is constructea) 5 yearsc) 1 year	d for an age interval of: b) 10 years d) None of the above
131. A population maintaining a constanta) Stable populationc) Mobile population	ant growth rate is said to be a : b) Stationary population d) None of the above
132. The NRR > 1 indicates that –a) Increase in populationc) Constant in population size	b) Decrease in populationd) None of the above
133. An experimental design is:a) A mapc) An architect	b) A plan of experiment d) All of the above
134. The number of principles of designa) 2c) 5	of experiment is: b) 3 d) 10
135. For an (5X5) LSD, the d.f for error a) 12 c) 4	is – b) 24 d) 5
136. In RBD local control is applied ina) 2c) 1	way direction. b) 3 d) None of the above
137. In the analysis of data of RBD with a) t(b-1) c) (b-1)(t-1)	'b' blocks and 't' treatments , the d.f for error is : b) b(t-1) d) None of the above
138. The method of confounding is a deala) Experimentsc) Blocks	evice to reduce the size of : b) Replications d) None of the above
 139. In 2³ factorial experiment, the nur a) 4 c) 3 	nber of first order interaction effect is: b) 7 d) 8
140. Replication in an experiment is mea) The number of blocksc) Repetition of the treatment	eans: b) Total number of treatments d) None of the above

141. In CRD with 't' treatments for 'n' experiment	
a) t-1 c) n-t	b) n-1 d) None of the above
•	,
by:	pulation units, then the sampling fraction is given
a) $^1\!/_n$	b) $^{n}/_{N}$
c) $^1/_N$	d) None of the above
143. The number of possible sample of size n out	of N population units without replacement is:
a) N ⁿ c) ^N C _n	b) $^{N}\!/_{n}$ d) n!
144. Under proportional allocation, the size of thea) Total sample sizec) Population size	e sample from each stratum depends on: b) Size of the stratum d) All of the above
145. Which of the following statement is correct? a) $V(\bar{y}_{st})_{opt} \leq V(\bar{y}_n)_R \leq V(\bar{y}_{st})_{prop}$ b) $V(\bar{y}_{st})_{opt} \leq V(\bar{y}_{st})_{prop} \leq V(\bar{y}_n)_R$ c) $V(\bar{y}_{st})_{prop} \leq V(\bar{y}_{st})_{opt} \leq V(\bar{y}_n)_R$ d) None of the above	
146. In case of linear systematic sampling, the po	pulation size is:
a) Large	b) Small
c) Multiple of sample size	d) None of the above
147. When sample size increases then –	
a) Sampling error increases	b) Sampling error decreases
c) Sampling error remains constant	d) None of the above
148. Census method is free from:	
a) Non- Sampling error	b) Sampling error
c) Both (a) and (b)	d) None of the above
149. Errors in a statistical model are always taken	i to be –
a) Independent	b) Distributed as $N(0, \sigma_e^2)$
c) Both (a) and (b)	d) None of the above
150. In random number table, the distribution of	digits follows:
a) Normal distribution	b) Uniform distribution
c) Binomial distribution	d) None of the above

MATHEMATICS

51. Consider the following statements:

	(I) There is a set which has exactly 1 subset.(II) There is no set having exactly 100 subsets.		
	Now select the correct option below: (a) Only (I) is true (b) Only (II) is true		h (I) and (II) are true h (I) and (II) are false
52	There are 25 members in a cricket club. There are 5 of and bowler. There are 15 who can play as bowler and 7 are neither bowlers nor wicketkeepers?	vho can	
	(a) 3 (b) 4	(c) 7 (d) 8	
53	. The relation \geq (greater than or equal to) in the set of re	l numbe	er is
	(a) Reflexive but not transitive(b) Reflexive and symmetric		lexive and transitive nmetric and transitive
	(b) Reflexive and symmetric	(u) Jyii	miletile and transitive
54	. Which of the relations below on the set $\{x, y, z\}$ is an eq		
	(a) {(x, y), (y, x), (y, z), (z, y), (z, x), (x, z)} (b) {(x, x), (x, y), (y, x)}		x), (y, y), (z, z)} ne of the above
55	Let $A = \{1, 2, 3, 4\}$ and $B = \{x, y, z\}$. Then (a) There is no mapping $f: A \rightarrow B$ which is one-to-one (b) Every mapping $f: A \rightarrow B$ is onto (c) There are exactly 3 mappings $f: A \rightarrow B$ which are not (d) None of the above	onto	
56	. The set of rational numbers is		
	(a) Countably infinite	(c) Fini	
	(b) Uncountable	(d) Noi	ne of the above
57	The quadratic expression $5x^2 - 8x + 4$ (a) is > 0 for all real values of x (b) is equal to zero for two distinct real numbers (c) has a zero at $x = \frac{4}{5}$. (d) None of the above		
50	The roots of the equation $9r^2 - 6r + 1$ are		

(a) Real and equal

(d) None of the above

(c) Not real

(b) Equal in magnitude but opposite in sign

- 59. The equation $x^3 x^2 x 2 = 0$ has
 - (a) All roots real

(c) All roots imaginary

(b) Exactly one real root

- (d) None of the above
- 60. The product of the roots of the equation $5x^2 17x^3 + 19x^2 + 107x = 0$ is
 - (a) 0
 - (b) $\frac{17}{5}$
 - (c) $-\frac{107}{5}$
 - (d) $\frac{19}{5}$
- 61. If α, β, γ are the roots of the equation $x^3 4x^2 + 8x + 11 = 0$ then the value of $\alpha^2 + \beta^2 + \gamma^2$ equals
 - (a) 0

(c) 8

(b) 4

- (d) 16
- 62. The simplified value of the following expression is

$$\left(\frac{e^x + e^{-x}}{2}\right)^2 - \left(\frac{e^x - e^{-x}}{2}\right)^2$$

- (a) 0
- (b) 1
- (c) 2
- (d) $\frac{1}{2}$
- 63. The value of the expression $log 11 + log \frac{1}{11}$ is equal to
 - (a) 0

(c) 2

(b) 1

- (d) None of the above
- 64. Let *A*, *G* and *H* be the arithmetic, geometric and harmonic means of *n* given positive numbers. Then
 - (a)
 - $A \leq G \leq H$

(c) $H \leq G \leq A$

(b) $H \le A \le G$

- (d) $G \le H \le A$
- 65. The minimum value of $4^x + 4^{1-x}, x \in \square$, is
 - (a) 2

(c) 1

(b) 4

(d) None of the above

- 66. The sequence $\{(-1)^n\}$ is
 - (a) Convergent

(c) Oscillatory

(b) Divergent

(d) None of the above

- 67. The sequence $\{2^{-n}\}$ is
 - (a) Convergent

(c) Oscillatory

(b) Divergent

- (d) None of the above
- 68. Let $\sum_{n=1}^{\infty} a_n$ be a series of positive numbers. Now select the correct statement from below:
 - (a) $\sum_{n=1}^{\infty} a_n$ is convergent whenever $\lim_{n\to\infty} a_n = 0$
 - (b) $\sum_{n=1}^{\infty} a_n$ is convergent if and only if $\lim_{n\to\infty} a_n = 0$
 - (c) $\sum_{n=1}^{\infty} a_n$ is not convergent if $\lim_{n\to\infty} a_n \neq 0$
 - (d) None of the above
- 69. The geometric series $\sum_{n=1}^{\infty} r^{n-1}$ is
 - (a) Convergent if $r \ge 1$

(c) Convergent if |r| < 1

(b) Convergent if $r \le -1$

- (d) None of the above
- 70. For any two complex numbers \mathcal{Z}_1 and \mathcal{Z}_2
 - (a) $|z_1| + |z_2| \le |z_1 + z_2|$

(c) $||z_1| - |z_2|| \le |z_1 - z_2|$

(b) $|z_1| + |z_2| = |z_1 + z_2|$

(d) $||z_1| - |z_2|| \ge |z_1 - z_2|$

- 71. Choose the correct statement below:
 - (a) The moduli of a complex number and its conjugate are equal
 - (b) The arguments of a complex number and its conjugate are equal
 - (c) If the arguments of two complex numbers are equal then their moduli are equal
 - (d) None of the above
- 72. Let ω be a complex cube root of 1. Then
 - (a) ω^2 is a real number

(c) $1 - \omega + \omega^2 = 0$

(b) $1 + \omega + \omega^2 = 0$

- (d) $1 + \omega \omega^2 = 0$
- 73. There are 10 boxes to keep 11 medals. Then
 - (a) Every box will get at least one medal
 - (b) At least one box will contain 2 or more medals
 - (c) At least one box will contain no medal
 - (d) None of the above
- 74. The inside of an auditorium has 8 different electric lights, all connected to different switches. In how many different ways can the auditorium be lit?
 - (a) 8

(c) 256

(b) 8!

(d) 255

75.	How many 4-digit numbers ca	n fori	med v	vith t	he digit	s 0, 1, (c)		
	(b) 256						•	None of the above
76.	In how many ways can 12 ap apple?	ples b	e dist	tribu	ted amo	ng 4	bo	oys so that every boy gets at least 1
	(a) 165					(c)) 4	155
	(b) 495					(d)	1 (None of the above
77.	Suppose A and B be two mutu	ıally e	xclusi	ve e	vents. T	hen		
	(a) A and B are independent	event	S			(c))	$P(A \cap B) = 0$
	$(b) P(A \cup B) = 0$					(d))	None of the above
78.	If A and B are independent ev	ents t	hen					
	(a) $P(A \cap B) = P(A)P(B)$					(c)) ,	$P(A \cap B) = P(B) - P(A)$
	(b) $P(A \cap B) = P(A) + P(B)$)				(d)	1 (None of the above
79.	A local football club has 15 pla random. What is the probabili	-		_	_			rs. A team of 11 players is selected at eselected?
	(a) $\frac{33}{91}$					(c)) -	<u>11</u>
	91						-	
	(b) $\frac{2}{3}$					(u	<i>)</i>	None of the above
80.	A coin is tossed three times. those obtained in the first two			bility	of gett	ing a	re	esult in the third toss different from
	(a) $\frac{1}{}$					(c))	1
	(a) $\frac{1}{2}$ (b) $\frac{1}{4}$							$\frac{1}{8}$ $\frac{1}{16}$
	(b) $\frac{1}{4}$					(d))	$\frac{1}{16}$
		1	63	₆₂ 2				
			ω	ω		<i>a</i> .		
81.	The value of the determinant	ω^2	1	ω	where	ω is	a	complex cube root of 1, is
		ω	ω^2	1				
	(a) 0							
	(b) 1							
	(c) ω							
	(d) ω^2							
82.	Let <i>a</i> be a diagonal entry of a	skew-	-symn	netri	real ma	atrix A	4.	Then
	(a) a must be positive					(c))	a = 0
	(b) a must be negative					(d))	None of the above
83.	Choose the correct statement	belo	w:					
	(a) Matrix addition is not com							
	(b) Matrix multiplication is co				بدامتيهم			
	(c) An invertible matrix has d	etern	ımant	. not	equal to	U		

(d) None of the above

84. The matrix
$$\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$$
 is

- (a) Nilpotent
- (b) Idempotent

- (c) Invertible
- (d) Skew-symmetric
- 85. The eigenvalues of the matrix $\begin{bmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ 2 & 0 & 2 \end{bmatrix}$ are
 - (a) All real and distinct
 - (b) 1 and 2

- (c) 1, -1 and 2
- (d) None of the above

- 86. Select the correct statement below:
 - (a) Eigenvalues of two distinct matrices can never be the same
 - (b) Every square matrix satisfies its characteristic equation
 - (c) The eigenvalues of real matrices are real and distinct
 - (d) None of the above
- 87. If $\cos \theta = \frac{x}{x+1}$ then $\sin \theta =$
 - (a) $\frac{x-1}{x+1}$
 - (b) $\frac{\sqrt{1-x^2}}{x+1}$
 - (c) $\frac{\sqrt{2x+1}}{x+1}$
 - (d) None of the above
- 88. The value of $\sin 75^{\circ}$ is
 - (a) $\frac{\sqrt{6}-\sqrt{2}}{4}$
 - (b) $\frac{\sqrt{6} + \sqrt{2}}{4}$
 - (c) $\frac{\sqrt{2}-\sqrt{6}}{4}$
 - (d) $\frac{\sqrt{6}+\sqrt{2}}{2}$

- 89. If $\sin\theta = -\frac{7}{25}$ and θ is in the 4th quadrant then
 - (a) $\tan \theta = \frac{7}{24}$

(c) $\cot \theta = -\frac{24}{7}$

(b) $\cos \theta = -\frac{24}{25}$

(d) $\sec \theta = -\frac{25}{24}$

- 90. Select the correct statement:
 - (a) $\sin^{-1}(-1) = \frac{3\pi}{2}$ because $\sin \frac{3\pi}{2} = -1$
 - (b) $\sin^{-1}(-1) = -\frac{\pi}{2}$
 - (c) The domain of the inverse trigonometric function $\sin^{-1} x$ is $[0,2\pi]$
 - (d) None of the above
- 91. The simplified value of $\sin \left(2\cos^{-1}\frac{3}{5}\right)$ is
 - (a) $\frac{24}{25}$

(c) $\frac{7}{25}$

(b) $-\frac{7}{25}$

(d) $-\frac{24}{25}$

- 92. If $2\sin\frac{x}{2} = 1, 0 \le x < \frac{\pi}{2}$ then
 - (a) $x = \frac{5\pi}{6}$
 - (b) $x = \frac{\pi}{3}$
 - (c) χ has exactly 2 solutions in the given interval
 - (d) $\ensuremath{\mathcal{X}}$ has no solution in the given interval
- 93. In a triangle *ABC* the measure of angle A is 60° , side \emptyset is $\sqrt{6}$ cm and side b is 2 cm. What is the measure of angle B?
 - (a) 90°

(c) 30°

(b) 60°

- (d) 45°
- 94. In a triangle ABC the sides a, b and c are of lengths 2 cm, 4 cm and $2\sqrt{3}$ cm respectively. What is the measure of angle C?
 - (a) 90°

(c) 30°

(b) 60°

- (d) 45°
- 95. The simplified form of the expression $\frac{12(\cos 23^o + i\sin 23^o)}{6(\cos 293^o + i\sin 293^o)}$ is
 - (a) 2*i*
 - (b) 2(1-i)
 - (c) -2i
 - (d) 2(i-1)

- 96. The sum of the series $1 \frac{1}{3} + \frac{1}{5} \frac{1}{7} + \cdots$ is
 - (a) $\frac{\pi}{2}$

(c) $\frac{\pi}{8}$

(b) $\frac{\pi}{4}$

- (d) None of the above
- 97. Select the correct statement from below:
 - (a) It is not possible to add two vectors of different directions
 - (b) Multiplication of a vector with a scalar always increases the magnitude of the vector
 - (c) The zero vector has no direction
 - (d) None of the above
- 98. The dot product of the two vectors $\hat{i}+3\hat{j}-4\hat{k}$ and $2\hat{i}-\hat{j}-\hat{k}$ is equal to
 - (a) 3
 - (b) $3\hat{i}$
 - (c) $3\hat{j}$
 - (d) $3\hat{k}$
- 99. The cross product $\vec{a} \times \vec{b}$ of the vectors $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = 2\hat{j} \hat{k}$ is equal to
 - (a) $3\hat{i} \hat{j} + 2\hat{k}$
 - (b) $-3\hat{i} + \hat{j} + 2\hat{k}$
 - (c) $-3\hat{i} \hat{j} + 2\hat{k}$
 - (d) $3\hat{i} + \hat{j} + 2\hat{k}$
- 100. Given three vectors \vec{a}, \vec{b} and \vec{c} the scalar triple product $\vec{a} \cdot (\vec{b} \times \vec{c})$ is
 - (a) the volume of the parallelepiped defined by the three vectors given
 - (b) the area of a triangle whose sides are represented by the given vectors
 - (c) the perimeter of a triangle whose sides are represented by the given vectors
 - (d) none of the above
- 101. Choose the correct formula from below:

(a)
$$\vec{a} \times (\vec{b} \times \vec{c}) = (\vec{a} \cdot \vec{c})\vec{b} - (\vec{a} \cdot \vec{b})\vec{c}$$

(b)
$$\vec{a} \times (\vec{b} \times \vec{c}) = (\vec{a} \cdot \vec{c})\vec{b} + (\vec{a} \cdot \vec{b})\vec{c}$$

(c)
$$\vec{a} \times (\vec{b} \times \vec{c}) = (\vec{b} \cdot \vec{a})\vec{c} - (\vec{a} \cdot \vec{c})\vec{b}$$

(d)
$$\vec{a} \times (\vec{b} \times \vec{c}) = (\vec{b} \cdot \vec{c})\vec{a} - (\vec{a} \cdot \vec{c})\vec{b}$$

- 102. Let f be a vector function and let ∇ be the vector differential operator. Which of the following is false?
 - (a) $\nabla \cdot (\nabla \times f) = 0$
 - (b) $\nabla \times (\nabla f) = 0$
 - (c) $\nabla \times (\nabla \times f) = 0$
 - (d) None of the above
- 103. Consider the equations below:
 - (I) $x^2 + y^2 6x + 8y 24 = 0$
 - (II) $x^2 + y^2 6x + 8y = 0$
 - (a) Equation (I) represents a circle but (II) does not
 - (b) Equation (I) represents a circle but (II) does not
 - (c) The two equations represent concentric circles
 - (d) The two equations represent degenerate circles
- 104. Consider the circle represented by the equation $x^2 + y^2 + 2x 10y + 25 = 0$. Then
 - (a) The y axis is a tangent to the circle at the point (0, 5)
 - (b) The x axis is a normal to the circle at the point (0, 5)
 - (c) There is no tangent to the circle passing through the origin
 - (d) The radius of the circle is 5 units
- 105. The equation of a circle of radius r in parametric form is
 - (a) $x = r \sec \theta, y = r \tan \theta$
 - (b) $x = r \cos \theta, y = r \sin \theta$
 - (c) $x = \cos r\theta$, $y = \sin r\theta$
 - (d) None of the above
- 106. For the parabola $y^2 = 4ax$ which of the following is true?
 - (a) The coordinates of the vertex is (a, 0)
 - (b) The coordinates of the focus is (0, 0)
 - (c) The equation of the axis is x = 0.
 - (d) The length of the latus rectum is 4a
 - 107. The focus of a parabola is (3, 0) and the equation of its directrix is x = -3. The equation of the parabola is:
 - (a) $x^2 = 12y$
 - (b) $y^2 = 12x$
 - (c) $x^2 = -12y$
 - (d) $y^2 = -12x$

108. The equation of the tangent to the parabola $y^2 = 8x$ at the point (2,4) is?

(a)
$$x = y + 2$$

(c)
$$x + y = 2$$

(b)
$$y = x + 2$$

(d) None of the above

109. For the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$

- (a) The eccentricity is $\frac{5}{4}$
- (b) The length of latus rectum is $\frac{9}{5}$
- (c) Equations of the directrices are $x = \pm \frac{25}{4}$
- (d) None of the above

110. A circle is a special case of an ellipse when

- (a) the eccentricity is equal to 0
- (b) the equation of the directrices are $x = \pm y$
- (c) the major axis becomes infinite
- (d) None of the above

111. The equation of the normal to the ellipse $x^2 + 2y^2 = 9$ at the point (1,2) is

(a)
$$x + 4y = 9$$

(c)
$$y = 4x - 2$$

(b)
$$y - 4x = 9$$

(d)
$$4x + y = 2$$

112. The equation xy = 4 represents

113. What is the centre of the hyperbola represented by the equation

$$4x^2 - 5y^2 + 40x - 30y - 45 = 0$$
?

(a)
$$(-5, -3)$$

(b)
$$(-3, -5)$$

114. An equation for the hyperbola with center (0, 0), vertex (0, 5), and asymptotes $y = \pm \frac{5}{3}x$ is

(a)
$$\frac{x^2}{25} - \frac{y^2}{9} = 1$$

(b)
$$\frac{x^2}{9} - \frac{y^2}{25} = 1$$

(c)
$$\frac{y^2}{25} - \frac{x^2}{9} = 1$$

(d) None of the above

115. Which of the triads below represents the direction cosines of a line?

- (a) 1, 0, 1
- (b) 1, 1, 0
- (c) 1, 1, 1

(d)
$$\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0$$

116. The direction cosines of a line perpendicular to the plane 8x + y + 4z = 1 are

- (a) l = 8, m = 1, n = 4
- (b) $l = \frac{8}{9}, m = \frac{1}{9}, n = \frac{4}{9}$
- (c) l = 0, m = 1, n = 0
- (d) None of the above

117. Let l_1, m_1, n_1 and l_2, m_2, n_2 be the direction ratios of two perpendicular lines. Then

- (a) $l_1 l_2 + m_1 m_2 + n_1 n_2 = 1$
- (b) $l_1 m_2 + m_1 n_2 + n_1 l_2 = 0$
- (c) $(l_1^2 + m_1^2 + n_1^2)(l_2^2 + m_2^2 + n_2^2) = 1$
- (d) $l_1 l_2 + m_1 m_2 + n_1 n_2 = 0$

118. The equation to the tangent plane at the point (1,0,0) of the sphere $x^2 + y^2 + z^2 = 1$ is

(a) x = 1

(c) z = 0

(b) y = 0

(d) x = 0

119. The direction cosines of the normal to the sphere $(x-3)^2 + (y-4)^2 + z^2 = 16$ at the point (3,0,0) are

(a) l = 0, m = 1, n = 0

(c) l = 0, m = 0, n = 1

(b) l = 1, m = 0, n = 0

(d) None of the above

120. If f(x) = [x] is the greatest integer function then $\lim_{x \to 1} f(x)$ is equal to

(a) 0

(c) 2

(b) 1

(d) Does not exist

121. If the function f(x) is continuous at x = a then

- (a) f(x) is differentiable at x = a
- (b) $\lim_{x\to a^-} f(x)$ may not exist
- (c) $\lim_{x \to a^+} f(x) = f(a)$
- (d) None of the above

122. The function
$$f(x) = \begin{cases} x \sin \frac{1}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

- (a) Has a removable discontinuity at x = 0
- (b) Is continuous at x = 0
- (c) Is monotonically increasing
- (d) Is monotonically decreasing

123. Let
$$f(x) = \begin{cases} -x, & x < 0 \\ x, & x \ge 0 \end{cases}$$

- (a) f(x) is not continuous at x = 0
- (b) f(x) is not differentiable at x = 0
- (c) f'(0) exists and is equal to 1.
- (d) None of the above

124. Let
$$x = a(\theta + \sin \theta)$$
, $y = a(1 - \cos \theta)$. Then $\frac{dy}{dx}$ is equal to

(a)
$$\frac{\cos\theta}{1+\sin\theta}$$

(c)
$$\frac{1 + \sin \theta}{\cos \theta}$$
(d)
$$\frac{1 + \cos \theta}{\sin \theta}$$

(b)
$$\frac{\sin\theta}{1+\cos\theta}$$

(d)
$$\frac{1+\cos\theta}{\sin\theta}$$

125. The function
$$f(x) = -\frac{x^3}{3} + \frac{x^2}{2} + 6x - 17$$
 is

- (a) Strictly increasing in □
- (b) Strictly increasing in the interval (-2,3)
- (c) Strictly decreasing in the interval (-2,3)
- (d) None of the above

126. Let
$$f(x) = \sin ax$$
 then $\frac{d^3y}{dx^3}$ is equal to

(a)
$$-a^3 \cos ax$$

(c)
$$-a^3 \sin ax$$

(b)
$$\sin^3 ax$$

(d)
$$-\cos^3 ax$$

127. The equation of the tangent to the curve
$$y = 3x^3 - 7x^2 + x + 1$$
 at $(2, -1)$ is

(a)
$$9x + y - 19 = 0$$

(c)
$$9x - y + 19 = 0$$

(b)
$$y-9x+19=0$$

128. Let
$$f(x)$$
 be differentiable in [a, b] and let $f'(c) = 0$ for some $c, a < c < b$. Then

- (a) f has a maximum at X = C
- (b) f has a minimum at x = c
- (c) f has neither a maximum nor a minimum at x = c
- (d) f may have a maximum at X = C

- 129. For $f(x) = 10x^6 24x^5 + 15x^4 40x^3 + 108$ the stationary points, i.e. the points where f'(x) = 0, are x = 0 and x = 2. Then
 - (a) f(2) is a maximum

(c) f(2) is a minimum

(b) f(0) is a maximum

- (d) f(0) is a minimum
- 130. For the conclusion of Rolle's theorem to hold for the function f(x) in the interval [a,b]
 - (a) f(a) and f(b) must be of opposite signs
 - (b) $f(a) \neq 0$
 - (c) $f(b) \neq 0$
 - (d) f(a) and f(b) must be equal
- 131. The formula for L'Hospital's rule is
 - (a) $\lim_{x \to a} \frac{f(x)}{g(x)} = \lim_{x \to a} \frac{f'(x)}{g'(x)}$
 - (b) $\lim_{x \to a} \frac{f(x)}{g(x)} = \frac{f'(a)}{g'(a)}$
 - (c) $\lim_{x \to a} \frac{f(x)}{g(x)} = \lim_{x \to a} \frac{f'(x)}{g(x)}$
 - (d) None of the above
- 132. The value of $\lim_{x\to 1} \frac{1+\log x-x}{1-2x+x^2}$ is equal to
 - (a) 0
 - (b) $\frac{1}{2}$

- (c) $-\frac{1}{2}$
- (d) 1
- 133. The partial derivative of $f(x, y) = 3x^3 + x^2y 2xy + 27y + 3$ with respect to x at the point (0, -3) is
 - (a) 6

(c) 4

(b) 5

(d) 3

- 134. If $u = e^{xyz}$ then $\frac{\partial^2 u}{\partial y \partial x}$ is equal to
 - (a) $xe^{xyz}(1+xyz)$

(c) $ze^{xyz}(1+xyz)$

(b) $ye^{xyz}(1+xyz)$

- (d) None of the above
- 135. If u = f(x, y) is a homogeneous function of degree 2 in x, y, then
 - (a) $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = u$

(c) $x \frac{\partial u}{\partial x} - y \frac{\partial u}{\partial y} = u$

(b) $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 2u$

(d) $x \frac{\partial u}{\partial x} - y \frac{\partial u}{\partial y} = 2u$

- 136. Choose the correct statement from the options below:
 - (a) A continuous function is integrable and differentiable
 - (b) A continuous function is integrable but may not be differentiable
 - (c) If a continuous function is integrable then it must be differentiable
 - (d) None of the above

$$137. \int \frac{2+x}{x} dx =$$

- (a) $2\log x + x + C$
- (b) $\log(x+2) + x + C$
- (c) $2\log(x+2) + C$
- (d) None of the above
- 138. If $y = \int (x^3 + 2x^{\frac{5}{2}} + 5x^{\frac{3}{2}} + 10x)dx$ and y = 0 when x = 0 then

(a)
$$y = \frac{1}{4}x^4 + \frac{4}{7}x^{\frac{7}{2}} + 2x^{\frac{5}{2}} + 5x^2 + 1$$

(b)
$$y = \frac{1}{4}x^4 - \frac{4}{7}x^{\frac{7}{2}} - 2x^{\frac{5}{2}} + 5x^2$$

(c)
$$y = \frac{1}{4}x^4 - \frac{4}{7}x^{\frac{7}{2}} - 2x^{\frac{5}{2}} + 5x^2 + 1$$

(d)
$$y = \frac{1}{4}x^4 + \frac{4}{7}x^{\frac{7}{2}} + 2x^{\frac{5}{2}} + 5x^2$$

139. Let u and v be two functions of x. Then the formula for integration by parts is given by

(a)
$$\int uvdx = u \int vdx + v \int udx$$

(b)
$$\int uvdx = u \int vdx - v \int udx$$

(c)
$$\int uvdx = u \int vdx - \int \left(\frac{du}{dx} \int vdx\right) dx$$

(d)
$$\int uvdx = u \int vdx + \int \left(\frac{du}{dx} \int vdx\right) dx$$

140.
$$\int \frac{2xdx}{(x-1)(x+1)} =$$

(a)
$$\log(x-1) + \log(x+1) + C$$

(b)
$$\log(x+1) - \log(x-1) + C$$

(c)
$$\log(x-1) - \log(x+1) + C$$

141. $\int \sin^2 x dx =$

- (a) $-\cos^2 x + C$
- (b) $\frac{1}{2}(x + \cos 2x) + C$
- $(c) \quad \frac{1}{2}(x-\sin 2x) + C$
- (d) $\frac{1}{2}(x+\sin 2x)+C$

142. $\int_{0}^{2} [x] dx =$

- (a) (
- (b) 1

(c) 2

(d) Does not exist

143. Which of the following is not correct?

- (a) $\int_0^{\frac{\pi}{2}} \sin x dx = \int_0^{\frac{\pi}{2}} \cos x dx$
- (b) $\int_0^\pi \cos x dx = 2 \int_0^{\frac{\pi}{2}} \cos x dx$
- (c) $\int_0^\pi \sin x dx = 2 \int_0^{\frac{\pi}{2}} \sin x dx$
- (d) None of the above

144. Let a < c < b. Then

(a)
$$\int_{a}^{b} f(x)dx < \int_{a}^{c} f(x)dx + \int_{c}^{b} f(x)dx$$

(b)
$$\int_{a}^{b} f(x)dx > \int_{a}^{c} f(x)dx + \int_{c}^{b} f(x)dx$$

(c)
$$\int_{a}^{b} f(x)dx = \int_{a}^{c} f(x)dx + \int_{c}^{b} f(x)dx$$

(d) None of the above

145. $\int_{-5}^{5} (x^3 + 5\sin^5 x) dx =$

- (a) 0
- (b) 10

- (c) 15
- (d) 20

146. The area bounded by the straight line x-2y+2=0, x-axis, y-axis and the line x=4 is equal to

(a) 4 square units

(c) 8 square units

(b) 6 square units

(d) 10 square units

- 147. The order of the differential equation $\frac{d^2y}{dx^2} \left(\frac{dy}{dx}\right)^2 = 1$ is
 - (a) 1

(c) 4

(b) 2

- (d) 0
- 148. The degree of the differential equation $\sqrt{1+\left(\frac{dy}{dx}\right)^2}=x^2$ is
 - (a) 1
 - (b) 2
 - (c) 4
 - (d) $\frac{1}{2}$
- 149. The order and degree of the differential equation of the family of circles touching the *x*-axis at the origin, are respectively
 - (a) 1, 1

(c) 2, 1

(b) 1, 2

- (d) 2, 2
- 150. If y(t) is a solution of $(1+t)\frac{dy}{dt}-ty=1$ and y(0)=-1 then y(1) is
 - (a) $-\frac{1}{2}$

(c) $e - \frac{1}{2}$

(b) $e + \frac{1}{2}$

(d) $\frac{1}{2}$

Space for Rough Work

Space for Rough Work