المملكة العربية السعودية
وزارة التعليم
جامعة الطائف- كلية العلوم
وحدة الاختبارات والمقاييس

Final Exam
First Term 1442 /1443

الفصل الدراسي الأول - العام الجامعي 1442/ 1443 هـ

الاسم	الرقم الجامعي								الرقم التسلسلي	رقم الشعبة	رقم نموذج الاختبار
											B

المقر الجامعي	القسم	البرنامج الاكاديمي	المستوى	اسم المقرر	رمز المقرر
الحوية طالبات	الرياضيات والاحصاء	البكالوريوس	5	احتمالات وإحصاء حاسب	202364-3

عدد اوراق الاختبار	عدد اسئلة الاختبار	تاريخ الاختبار	زمن الاختبار	رقم قاعة الاختبار
7	2	28/5/1443	8-10 am	

رقم السؤال	السؤال الأول	السؤال الثاني	السؤال الثالث	السؤال الرابع	السؤال الخامس	السؤال السادس	المجموع
الدرجة المقررة للسؤال	10	40					50
درجة الطالب الفعلية							
اجمالي درجة الطالب كتابة:					اجمالي درجة الطالب بالأرقام :		
اسم المصحح	د. امال ماضي				التوقيع		
اسم المراجع					التوقيع		

مع تمنياتنا لكم بالتوفيق والنجاح

Important instructions:

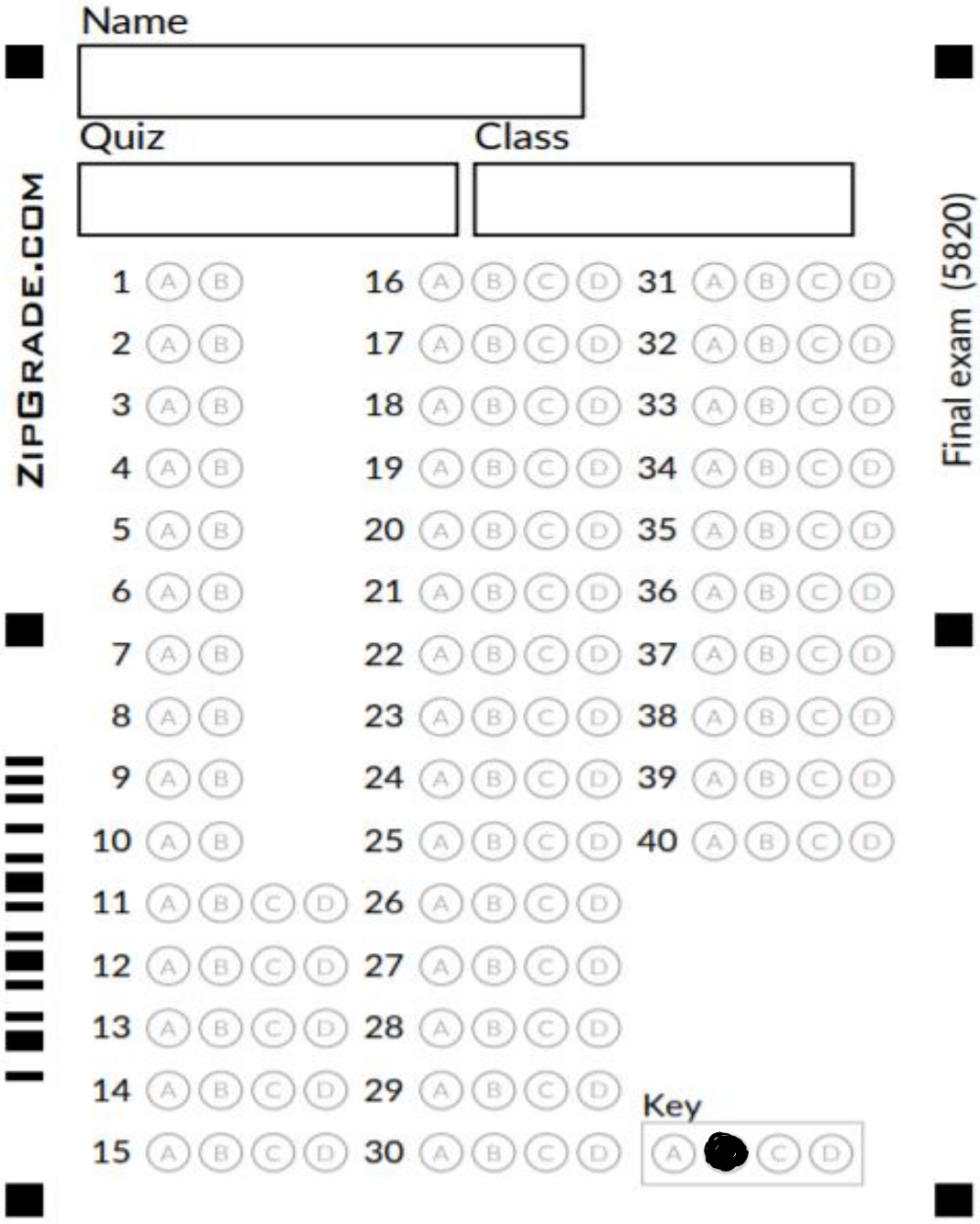
(1) For the true or false questions, fill the circle A for true and fill the circle B for false in the answer sheet.

(2) For the multiple-choice questions, fill only the circle in the answer sheet that corresponds to your answer choice.

(3) Don't forget to write your name, your inscription number and your serial number.

(4) Don't forget to write your name, your inscription number and your serial number in the answer sheet.

(5) You can use the calculator.



Answer the following questions:

Q1. (10 Marks): For the true or false questions (1-10), fill the circle ⓐ for true and fill the circle ⓑ for false in the answer sheet page 2 above.

1.	The standard normal distribution is a special case of the normal distribution with mean μ =1, standerd deviation $\sigma = 0$.	(X)
2.	Point estimation is a single number used to approximate the true value of the parameter.	(✓)
3.	In hypothesis testing: the type-II error is the probability of accepting the null hypothesis when it is true.	(X)
4.	Let X~h(x; 40, 5, 3), *then* $E(X)$ =0.375	(✓)
5.	Let X be continuous uniform distribution on the interval [2, 4], then $E(X) = 3$.	(✓)
6.	If the events A and B are, disjoint events, then$P\ (A \cap B) = 0$.	(✓)
7.	Let X be a Poisson random variable with parameter $\lambda = 8$, then $E(X) = 10$.	(X)
8.	Two events $E_1$and E_2 are said to be independent if and only if $p(E_1 \mid E_2) = p(E_1)$.	(✓)
9.	If Z~N(0,1), then $P(Z < 0) = 0.5$	(✓)
10.	$Var(9X) = 81\ Var(X)$.	(✓)

Q2. (40 Marks): Choose the right answer for each question of the following:

If $P(A) = 0.3$, $P(B) = 0.5$ and $P(A \cap B) = 0.1$

Use the previous information to answer questions (11- 16).

11. p (A^c) is equal:			
A) 0.1	**B) 0.9**	**C) 0.7**	**D) 0**
12. p (A ∪ B)			
A) 0. 25	**B) 0.30**	**C) 0.7**	**D) 0.75**
13. $P(A^c \cap B)$ is equal:			
A) 0. 05	**B) 0.01**	**C) 0.5**	**D) 0.4**
14. $P(A^c \cap B^c)$ is equal:			
A) 0.3	**B) 0.15**	**C) 0.6**	**D) 0.35**

	A	A^c	T
B	0.1	0.4	0.5
B^c	0.2	0.3	0.5

12) $A + B - A \cap B$

$0.3 + 0.5 - 0.1 = 0.7$

T	0.3	0.7	1

15) $P(A^c|B^c) = \frac{A^c \cap B^c}{B^c} = \frac{0.3}{0.5} = 0.6$

15. p $(A^c\|B^c)$ is equal:			
A) 0.6	B) 0.5	C) 0.7	D) 0
16. p (B^c) is equal:			
A) 0. 25	**B) 0.5**	C) 0.7	D) 0.75

1000 individuals are classified below by sex and smoking habit in the following Table. If a person is selected at random from this group. Choose the correct answer from (17-20):

17) $= \frac{400}{1000} = 0.4$

18) $= \frac{50}{1000} = 0.05$

19) $= \frac{F \cap D}{D} = \frac{50}{350} = 0.14$

20) $= \frac{350}{1000} = 0.35$

Smoking habit	Sex		Total
	Mall (M)	Female (F)	
Daily (D)	300	50	350
Occasionally(O)	200	50	250
Not at all (N)	100	300	400
Total	600	400	1000

17. The probability that the person is female (F) is:			
A) 0.1	B) 0.9	**C) 0.4**	D) 0
18. $p(F \cap D)$ is equal:			
A) 0. 25	B) 0.30	C) 0.4	**D) 0.05**
19. $p(F\|D)$ is equal:			
A) 0. 05	**B) 0.1429**	C) 0.5	D) 0.25
20. $p(D)$ is equal :			
A) 0.35	B) 0.15	C) 0.6	D) 0.75

If X has a binomial distribution with $n = 3$ and $p = 0.40$, choose the correct answer for the questions (21-23): $\mu = np$ $Var = np(1-p)$

21. $E(X) =$			
A) 0.1	**B) 1.2**	C) 0.4	D) 0
22. $Var(X) =$			
A) 0. 25	B) 0.30	C) 0.4	**D) 0.72**
23. $p(x = 0) =$			
A) 0.216	B) 0.14	C) 0.5	D) 0.25

$\binom{n}{x} p^x (1-p)^{n-x}$

$\binom{3}{0} (0.40)^0 (1-0.40)^{3-0} =$

Consider the following probability mass function for the random variable X.

X	-1	0	1	2
P(X)	0.15	0.35	0.30	0.20
xP(x)	-0.15	0	0.30	0.40

$= 0.55$

Use this information to answer questions (24-27)

24. The mean is:

A) 1.1 B) 0.55 C) 2.45 D) 0.45

25. $p(X = 1) =$

A) 0.30 B) 0.10 C) 0.20 D) 0.15

26. $p(X < 0) =$

A) 0.55 B) 0.25 C) 0.15 D) 0.08

27. $E(3x) =$ $3E(X) = 3 \times 0.55$

A) 0.45 B) 0.55 C) 0.85 D) 1.65

Suppose that the hemoglobin level for newborns babies has a normal distribution with mean $\mu = 20$ and standard deviation $\sigma = 2$. Answer the questions (28-32)

28. $P(X < 18)$ **is equal:**

A) 0.990 B) 0.1587 C) 0.8413 D) 0.9772

29. $P(X = 30)$ **is equal:**

A) 0 B) 1 C) 0.12 D) 0.130

30. The median of X is equal:

A) 2 B) 0 C) 20 D) 10

31. $P(18 < X < 22)$ **is equal:**

A) 0.6826 B) 0.1587 C) 0.8413 D) 0.9772

32. $P(X > 24)$ **is equal:**

A) 0.8413 B) 0.1587 C) 0.0228 D) 0.9772

28) $= \frac{18-20}{2} = P(Z < -1) = 0.1587$

32) $\frac{24-20}{2} = P(Z > 2)$ $1 - 0.9772$

31) $P(\frac{18-22}{2} < Z \frac{22-20}{2})$

$P = (-1 < Z < 1)$

$0.1587 - 0.8413$

It was desired to estimate the proportion of anemic children in a certain preparatory school. A sample of size 900 children is studied, and it is found that 300 anemic children. Use this information to answer questions (33-35). $P = \frac{300}{900} = 0.33$

33. The point estimation of the proportion of anemic children *P* is:

A) 2.5 | **B) 0.33** | C) 0.45 | D) 0. 9

34. The upper limit of a 95% confidence interval for *P* is: $P \pm Z * \sqrt{\frac{P(1-P)}{n}} = 0.33 \pm 1.96 * \sqrt{\frac{0.33(1-0.33)}{900}}$

A) 0.361 | B) 0.247 | C) 0.196 | D) 0.53

35. The lower limit of a 95% confidence interval for *P* is:

A) 0.152 | B) 0.22 | **C) 0.299** | D) 0.53

A random sample of 100 recorded deaths in the United States during the past year showed an average of 72 years. Assuming a population standard deviation of 8 year, does this seem to indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance. Use this information to answer questions (36-40).

36. The null hypothesis is:

A) $H_0: \mu = 70$ | B) $H_0: \mu < 70$ | C) $H_0: \mu \neq 70$ | D) $H_0: \mu > 70$

37. The alternative hypothesis is:

A) $H_A: \mu = 70$ | B) $H_A: \mu < 70$ | C) $H_A: \mu \neq 70$ | **D) $H_A: \mu > 70$**

38. The test statistic Z_c=

A) 2.5 | B) 1.96 | C) 4.43 | D) 3.2

39. We reject H_0 if,

A) $Z_c < -1.645$ | B) $Z_c > 1.645$ or $Z_c < -1.645$ | C) $Z_c < 1.645$ | D) $Z_c > 1.645$

40. The decision is:

A) Fail to reject H_0 | **B) Reject H_0** | C) Fail to reject H_0 and Fail to reject H_A | D) Reject H_0 and reject H_A

Some useful values

$Z_{0.1587} = -1$	$Z_{0.5} = 0$	$Z_{0.8413} = 1$	$Z_{0.975} = 1.96$
$Z_{0.9616} = 1.77$	$Z_{0.9772} = 2$	$Z_{0.05} = 1.645$	$Z_{0.9996} = 3.33$

38) $\frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}} = \frac{72 - 70}{\frac{8}{\sqrt{100}}} = 2.5$

The End Of The questions

Best wishes

Examiners Team