

ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2013
EXAMINATION CATEGORY: TECHNICAL

PAPER III: SUBJECT SPECIALIZATION PAPER for *PUBLIC HEALTH*

Date	: 14 October 2013
Total Marks	: 100
Examination Time	: 150 minutes (2.5 hours)
Reading Time	: 15 Minutes (prior to examination time)

GENERAL INSTRUCTIONS:

1. Write your Roll Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is being provided to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO SECTIONS**, namely SECTION A and SECTION B:
 - **SECTION A** has two parts: Part I - 30 Multiple-Choice Questions
 Part II - 4 Short Answer Questions
All questions under SECTION A are **COMPULSORY**.
 - **SECTION B** consists of two Case Studies. Choose only ONE case study and answer the questions under your choice.
4. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating any or correct Section, Part and Question Number will NOT be evaluated and no marks would be awarded.
5. Begin each Section and Part in a fresh page of the Answer Booklet.
6. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
7. Use of any other paper including paper for rough work is not permitted.
8. You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.
9. This paper has **12** printed pages in all, including this instruction page.

GOOD LUCK!

SECTION A

PART I - Multiple Choice Questions (30 Marks)

Choose the correct answer and write down the letter of the correct answer chosen in the Answer Booklet against the question number. E.g. 31 (c). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. Demography relates to study of population with regard to:
 - a. Size and density,
 - b. Fertility,
 - c. Mortality,
 - d. All of above

2. In the ICPD,1994 at Cairo, the population community decided that
 - a. Higher population growth is hindering development and governments should invest in family planning programs
 - b. Under development and economic power relationships between developing and developed word is perpetuating the population growth in developing countries
 - c. Advancing gender equity and women empowerment will play a key role in the success of family planning and other development programs
 - d. Family planning programs should be strengthened to achieve demographic objectives

3. Establishing the community diagnosis does not include:
 - a. the health diagnosis
 - b. the environmental factors
 - c. an analysis of the quality of life
 - d. study of the factors influencing behavior

4. The occurrence in a community or region of cases of an illness, specific health related behavior or other health related events in excess of normal expectancy for a given period of time.
 - a. Communicable disease
 - b. Epidemic
 - c. Endemic
 - d. Out break

5. Epidemiology can be regarded as the study of
 - a. the etiology of human diseases
 - b. the incidence and causes of human death
 - c. the distribution and determinants of disease risk in human populations
 - d. the functional parameters of the health care delivery system

6. All are steps in primary prevention of disease EXCEPT
 - a. Promotion of healthy life styles
 - b. Good nutrition
 - c. Immunization
 - d. Treatment

7. The numerator for calculating crude birth rate includes:
 - a. All live births
 - b. All births that survived to their first year of live
 - c. All live births and still births
 - d. None of the above

8. All are true about Focus Group Discussions EXCEPT
 - a. it helps prepare a questionnaire
 - b. used to find out why people behave in a particular way
 - c. the information is quantitative in nature
 - d. it gives indication for further investigation

9. The number of new occurrences of the disease in a population, over a period of time is called:
 - a. Prevalence
 - b. Point prevalence
 - c. Incidence
 - d. Burden of disease

10. Which of the following statements regarding infant mortality rate is correct?
 - a. the numerator contains the number of neonates who died during the first month of life
 - b. this is the ratio of neonatal deaths during the first week of life per 1000 live births
 - c. this is the ratio of infant deaths during the first year of life per 1000 live births
 - d. this is the ratio of infant deaths during the first year of live per 10,000 live births

11. The term "iceberg phenomenon":
 - a. is used to describe latent morbidity phenomena
 - b. means diseases not presented to the health care delivery system for treatment
 - c. means that medical care is delivered, although not for the actual diagnosis
 - d. indicates diseases of unknown etiology

12. How does the incidence of cervical cancer rank among all female malignancies in Bhutan?
 - a. first place
 - b. second place

- c. third place
 - d. fourth place
13. What is the mortality rate of rabies?
- a. 20-40%
 - b. 50-60%
 - c. 70-80%
 - d. 100%
14. The World Health Day is celebrated on
- a. May 12th
 - b. April 7th
 - c. April 13th
 - d. December 18th
15. All of these can be sterilized by autoclaving except:
- a. Gloves
 - b. Culture media
 - c. Plastics
 - d. Linen
16. The most heat sensitive vaccine is:
- a. BCG
 - b. OPV
 - c. DPT
 - d. Measles
17. BCG vaccination is CONTRAINDICATED:
- a. unless tuberculin testing has been performed earlier
 - b. in symptomatic and asymptomatic HIV-positive individuals
 - c. in pregnancy
 - d. in symptomatic HIV- positive patients
18. Reconstituted BCG vaccine should be used within:
- a. 3 hours
 - b. 6 hours
 - c. 18 hours
 - d. 24 hours
19. The Primary Schedule of hepatitis B vaccination is:
- a. 0, 1, 6 months
 - b. 3, 6 months

- c. 1, 2, 12 months
 - d. 0, 1, 5 months
20. The confirmatory test for paralytic poliomyelitis is a:
- a. Stool examination
 - b. CSF examination
 - c. Nerve examination
 - d. Blood examination
21. All are barriers to good communication EXCEPT?
- a. Service provider use simple words and language
 - b. Lack of privacy
 - c. Adolescents are unable to talk because of fear
 - d. Insufficient time to explain
22. Some misconception about communication are:
- a. Communication solves all problems
 - b. Communication physically breaks down
 - c. The meaning we attach to a word will be the meaning everyone else attaches to the word
 - d. All of the given options
23. The person who attaches meaning to a message is called
- a. Sender
 - b. Encoder
 - c. Transmitter
 - d. Receiver
24. After becoming infected by the HIV virus, a person can still test negative for HIV for up to
- a. 2 months
 - b. 4 months
 - c. 6 months
 - d. 1 year
25. Major route of transmission of Hepatitis A is:
- a. Feco oral route
 - b. Parental route
 - c. Sexual transmission
 - d. Perinatal transmission

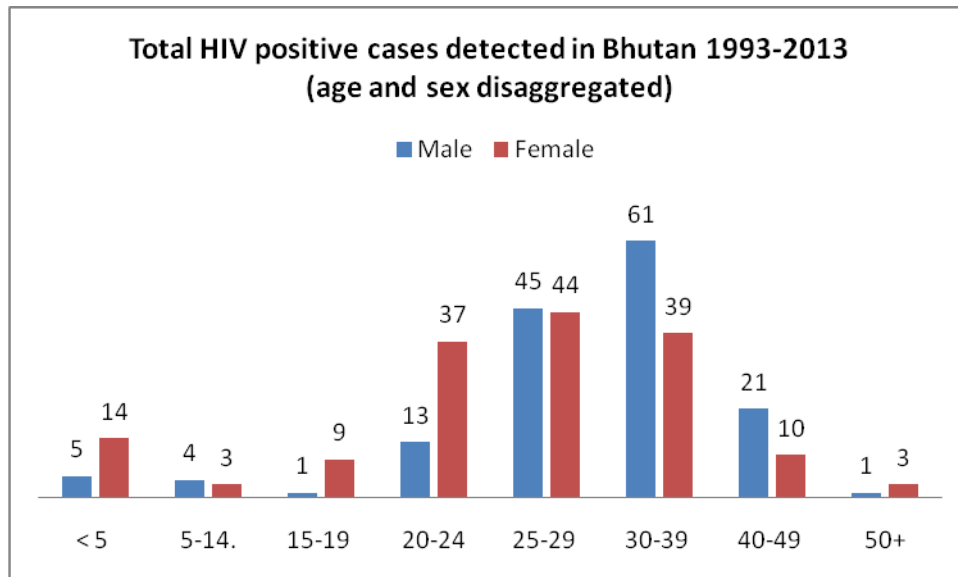
26. The contraceptive failure rates is highest on typical use with
- Condoms
 - Exclusive breast feeding in the first six months
 - Intrauterine device
 - Oral contraceptives
27. The term 'parity' refers to
- Total number of pregnancies a woman had
 - Total number of births a woman had
 - Total number of live births a woman had
 - Total number of living children a woman has at the time of survey
28. Which of the following factors has the greatest significance in the transmission of nosocomial infections?
- nursing equipment
 - medical instruments and devices
 - contaminated hands of the staff
 - ambient air
29. The following are the contents of ORS except:
- Sodium Chloride
 - Potassium Chloride
 - Sugar
 - Calcium Carbonate
30. Dental caries is caused due to deficiency of:
- Iodine
 - Iron
 - Fluorine
 - Copper

PART – II : Short Answer Questions (20 marks)

Answer ALL the questions. Each question carries 5 marks. Mark for each sub-question is indicated in the brackets.

QUESTION 1

The bar graph given below shows the age and sex disaggregated data of HIV cases detected in Bhutan (1993-2013). The x axis represents the age groups of males and females and the y axis represents the number of positive cases detected. You as are trying to garner local support to carry out HIV/AIDS program activities in your district. The District Multisectoral Task Force (MSTF) is an important stakeholder for the program. Critically analyze the data in the graph and write down **5 pertinent findings** you wish to share with the MSTF members during the meeting. Each correct finding will be awarded 1 mark.



Source: NACP, MOH

QUESTION 2

You have been recently appointed as the District Health Officer of Thimphu Dzongkhag. You decide to visit Talakha Goenpa to supervise the monthly outreach activities carried out for the monks. While the Health Assistant is busy conducting a health and hygiene session for the young monks you decide to conduct a general check-up for the older monks. You measured the blood pressure of 9 monks. Their diastolic blood pressures (mmHg) were as given below:

83 90 80 105 80 85 80 74 88

- a) Calculate the following (1 mark each)
- i. Mean
 - ii. Median
 - iii. Mode
- b) Calculate the % of monks who are hypertensive and require treatment? (1 mark)
- c) Of the above 3 measures which is the most commonly used. (1 mark)

QUESTION 3

The National HIV/AIDS Control Program has decided to expand Voluntary Counseling and Testing(VCT) services to all Basic Health Units in your dzongkhag. You are asked to estimate the logistics and supplies that will be required to start these services. A good starting point would be to estimate the size of the population that will be using the VCT services. You have neither the time nor the resources to conduct a local survey so you will have to depend on information that is already available.

- a. Name 2 sources of data you will use to identify the size of your target population. (2 marks)
- b. You find that you need some additional information to make the VCT service both acceptable and accessible. You decide to conduct an audience research to collect more detailed information. Name 3 methods you may use. (3 Marks)

QUESTION 4

Associate the following term(s) with their corresponding statement(s)!

A. Sensitivity	1) indicates that the method or test in fact measures the targeted parameter D
B. Specificity	2) has a negative value in healthy individuals B
C. Predictive value	3) has a positive value in ill individuals A
D. Validity	4) indicates the risk of developing the disease of a given case if the individual exposes himself to the effects of certain risk factors E
E. Relative risk	5) indicates the prevalence of patients among the cases indicated positive by this method C

SECTION B
Case Study

Choose either Case 1 or Case 2 from this Section. Each Case carries 50 marks. Mark for each sub-question is indicated in the brackets.

CASE 1

You are invited to a local women’s group (*amtsu tsogpa*) to give a talk on cervical cancer. The women have been sensitized on cervical cancer before however, the President of the group Aum Chimmi has arranged this talk because 2 members of their group have recently succumbed to the disease. The women are highly concerned and have a number of doubts to clarify. You have decided to give a presentation on cervical cancer to be followed by a question and answer session.

- A. You want to pass some important messages on cervical cancer to this target audience through your presentation. Write down 10 key messages in **bullet point**? (Note: try to base your answer on your personal experience in the districts. Think about the key factors related to late detection of cervical cancers.) (10 marks)

- B. Several members of the “*amtsu tsogpa*” group have teenage daughters and want more information on the recently introduced “vaccine” which their **daughters** are receiving in school.
 - i) What vaccine do you think they are they talking about? Which year was the vaccine integrated into the routine immunization schedule? Why? (5 marks)

 - ii) The vaccine protects girls against 4 main types/strains of the virus. Name the 4 strains of virus and indicate which strain is affective against which disease? How many doses of the vaccine will you recommend for full protection? (5 marks)

 - iii) Provide information on the vaccine (dose, route vaccination schedule) so mothers can ensure their daughters complete the scheduled doses. Enter the information in columns. (5 marks)

Vaccine	Dose	Route	Schedule

C. The women's group wants information on cervical cancer. Can you:

- i) Mention 5 risk factors of cervical cancer ? (5 marks)
 - ii) Tell them about the strategies to prevent cervical cancer i.e. primary prevention strategies. ? (5 marks)
 - iii) Tell them about signs and symptoms of cervical cancer (5 marks)
- D. Some women are confused and ask you the following question. "We are told that our daughters are getting vaccinated in schools to protect them from cervical cancer. Do they still need to do Pap smear screening in the future i.e. after the age of 20 years"? Can you provide some explanation? (5 marks)
- E. Since the HPV virus is transmitted through the sexual route several women question you about vaccinating boys and men? What would be your best answer. (5 marks)

CASE 2

You are the DHO of Tsirang Dzongkhag. It is 4.40 pm on Friday and you are about to leave your office.... you give a sigh of relief and eagerly look forward to spending a relaxing weekend playing archery with some old friends. At 4.50 pm you receive a call from Tobgay the Health Assistant from Pataley BHU.

He sounds very stressed and worried and tells you that he does not know whether he should be concerned but in the last 2 weeks he is seeing an increasing number of cases with acute febrile illness in his BHU. Tobgay has just recently passed out from the RIHS and was posted in Pataley BHU after the previous HA left to join the BPH program in Thimphu. He appears to be ill informed about the routine reporting processes. Tobgay tells you that most of the patients were monks from the local sheydra located about 2 miles from the BHU. Although some cases of acute febrile illness were from the local community the numbers are not significantly higher than that of last year.

One of your responsibilities as a DHO is that of a field investigator. You need to verify the problem before ringing alarm bells. Therefore you form a small team comprising of a doctor and a laboratory technician and arrive at the Sheydra on Saturday afternoon to verify and investigate the problem. The BHU clinic register shows 91 out of 120 monks were affected by the illness. The majority of the monks had recovered fully without treatment 40 were still ill. There were no admissions or fatalities. While talking to one of the senior monks you were also

told that 10 of the senior monks recently returned from Bodhagaya, they were among the initial cases. You start analyzing the data available in the clinic register and have tabulated the information below.

Symptom	Number with Symptom
Malaise (gen. discomfort)	90
Myalgia (muscle aches)	87
Fever	83
Chills	83
Headache	83
Cough	51
Dizziness	48
Nausea	41
Chest pain	40
Joint pain	38
Sore throat	28
Abdominal pain	23
Confusion	18
Bizarre dreams	5
Irritability	2

Answer the questions below

- a.) Which group of symptoms would you use to determine if a patient represented a “case?” (3 marks)
- b.) Why would you not want to include a symptom such as “sore throat” in your definition? (1 mark)
- c.) What is the attack rate for the monks at the time of your arrival on Saturday? (show work) (2 marks)
- d.) What information do you need to have in order to develop a hypothesis? (5 marks)
- e.) Taking into account the geographic location and travel history what five infectious diseases do you suspect the monks might have and why? (This is your differential diagnosis of what it MIGHT be.) (5 marks)
- f.) Do you think this an outbreak? Define an outbreak. (3 marks)
- g.) What types of samples would you want to take to try to identify the organism responsible for the outbreak? (3 marks)

- h.)** What are some of the tests that you think need to be done? *(2marks)*
- i.)** What is your likeliest diagnosis in this case? Give reason *(2 marks)*
- j.)** It evident that the disease is infectious in nature. What are some every day precautions that can be taken by the monks to protect the their health and that of their communities *(5 marks)*
- k.)** In investigating an outbreak, speed is essential, but getting the right answer is essential, too. To satisfy both requirements, epidemiologists approach investigations systematically. Write down 10 steps that you will follow after you are informed about an outbreak situation. *(10 marks)*
- l.)** Prepare a media report. *(5 marks)*
- m.)** Who else will you share the above information with? Why? *(4 mark)*