

MBBS Third Professional Examination

COMMUNITY MEDICINE

Model Questions of OSPE

Total No. of Spots =10

Total Marks=25 (2.5 Marks for each spot / station)

Time = 30 minutes (3 minutes at one station)

NUTRITION

Q1.

- a. Calculate the BMI (1.5)
- b. Give its interpretation. (1)

Key: a

$$\text{BMI} = \frac{\text{Weight in Kg}}{(\text{Height in meter})^2}$$

INTERPRETATION	BMI
Under weight	< 18.5
Normal range	18.5 – 24.9
Over weight	≥ 25
Pre-obese	25 – 29.9
Obese class I	30 – 34.9
Obese class II	35 – 39.9
Obese class III	≥ 40

Key: b

Interpret BMI on the basis of this scale.

Weighting: a. 2 b.1

Reference: Preventive & Social Medicine (K. Park)

PUBLIC HEALTH & HEALTH SYSTEM / PHC

Q2. POF hospital, Wah is 600 bedded. On an average 500 beds remain occupied throughout the year; calculate bed occupancy rate of this hospital. (2.5)

Key: 2

$$\begin{aligned} &\text{Bed occupancy rate} \\ &= \frac{500 \times 365}{600 \times 365} \times 100 \\ &= 83.33\% \end{aligned}$$

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

IMMUNOLOGY

Q.3 Vaccines of EPI are placed in the different compartments of the Refrigerator. Check their placement and corrective shuffling may be done, if needed. (2.5)

Key: 3

Among the vaccines, Polio is the most sensitive to heat, requiring storage at minus 20°C. Measles and polio vaccines must be stored in the freezer compartment. Vaccines which must be stored in the cold part but never allowed to freeze are typhoid, DPT, Tetanus Toxoid, DT, BCG and diluents.

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

BIostatistics

Q4.

Anemia Status	Parity status	
	Parity 1	Parity 4
Anemia	14	16
Non Anemia	46	24

The calculated Chi-square value of the given data is 3.17.

- a. Calculate the degree of freedom. (1)
- b. By referring to the given χ^2 table, interpret the significance of the result. (1.5)

Key: a

$$\begin{aligned} \text{Degree of freedom} &= (\text{Row} - 1) \times (\text{Column} - 1) \\ &= (2-1) \times (2-1) \\ &= 1 \end{aligned}$$

Key: b

$$\text{Since } \chi^2 = 3.17$$

$$\chi^2 < 3.84$$

$$\text{So } P > 0.05$$

The difference is not significant

Weighting: a.1 b.2

Reference: Preventive & Social Medicine (K. Park)

D.F.	.50	.10	.05	.02	.01	.005	.001
1.	0.45	2.71	3.84	5.41	6.64	7.88	10.83
2.	1.39	4.61	5.99	7.82	9.21	10.60	13.82
3.	2.37	6.25	7.82	9.84	11.34	12.64	16.27
4.	3.36	7.78	9.49	11.67	13.28	14.86	18.47
5.	4.35	9.24	11.07	13.39	15.09	16.75	20.51
6.	5.35	10.65	12.59	15.03	16.81	18.55	22.46
7.	6.35	12.02	14.07	16.62	18.48	20.28	24.32
8.	7.34	13.36	15.51	18.17	20.09	21.96	26.13
9.	8.34	14.68	16.92	19.68	21.67	23.59	27.88
10.	9.34	15.99	18.31	21.16	23.21	25.19	29.59

DEMOGRAPHY AND POPULATION CONTROL

Q5. Post insertional advice to the patients. (2.5)

Key: 5

A patient is sitting to be counseled.

1. It is reversible method
2. Immediate → collapse, syncope(Counsel about symptoms)
3. Late → Metrorrhagia, backache, menorrhagia
4. It will not interfere with your marital / sex life
5. You can still become pregnant as it does not give 100% protection
6. It can be lost also.
7. It can perforate the wall of uterus.
8. You can check the IUCD in position by the thread
9. Follow-up
10. Duration
 - a. Copper T → 10 years
 - b. Multiload → 5 years

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

REPRODUCTIVE HEALTH

Q6. A woman reports at BHU with edema and blood pressure of 150/95 mm of Hg at the gestational age of 34 weeks.

- a. What is this condition called? (1)**
b. What are the risks to the baby and to the mother? (1.5)

Key: a

The condition is called pre-eclampsia.

Key: b

Patient may develop eclampsia. It is also called Toxemia of pregnancy and it is one of the major causes of maternal mortality, 13% of deaths are due to toxemia of pregnancy. Babies are likely to have low birth weight and are prone to mortality.

Weighting: a.1 b.2

Reference: Preventive & Social Medicine (K. Park)

COMMUNICABLE DISEASES / REPRODUCTIVE HEALTH /

IMMUNOLOGY

Q.7 A pregnant woman is bitten by a rabid dog. Outline the steps of management. (2.5)

Key: 7

If a woman is bitten by a rabid dog:

- It is advisable to give both active and passive immunization as Rabies vaccine is a killed vaccine and can be given safely during pregnancy.
- Wound toilet with proper antiseptic measures should be done.
- No suturing should be done before 24 hours.

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

COMMUNICABLE DISEASES / NUTRITION / IMMUNOLOGY

Q.8 Mother is Hepatitis B positive, what advice would you give after delivery regarding:

a. The baby's immunization (1.5)

b. Breast feeding. (1)

Key: a

i. Passive immunization

Hepatitis B immunoglobulin 0.05 to 0.07ml/kg body weight should be given. Two doses should be given 30 days apart.

ii. Active immunization

1st dose of Hepatitis B virus vaccine (1ml) should be given intramuscularly within 7 days of birth. 2nd and 3rd dose should be given after 1 month and 6 months respectively.

Key: b

Mother can breast feed her baby as immunization has being done.

Weighting: a.2 b.1

Reference: Preventive & Social Medicine (K. Park)

FOOD & NUTRITION

Q.9

- a. Measure the mid arm circumference. (1)**
- b. Interpret the results. (1.5)**

Key: a

Method

Key: b

The interpretation is based on the following:

- Arm circumference exceeding 13.5cm = Satisfactory nutritional status.
- Between 12.5 and 13.5 = Mild to moderate malnutrition.
- Below 12.5 = Severe malnutrition.

Weighting: a.1 b.2

Reference: Preventive & Social Medicine (K. Park)

COMMUNICABLE DISEASES / NUTRITION

Q.10 The mother is tuberculous:

a. What instructions would you give for breast feeding of the baby? (1)

b. What measures should be taken to prevent the baby from acquiring this infection in the immediate post natal period.

(1.5)

Key: a

Breast feeding recommended.

Key: b

- Baby should be given INH prophylactically
- BCG immunization.
- Mother should observe personal hygiene for protection of tuberculous transmission to baby:
 - Use of mask.
 - Avoid spitting in the room.
 - etc.

Weighting: a.1 b.2

Reference: Preventive & Social Medicine (K. Park)

HEALTH EDUCATION

Q.11 Educate a group of people regarding hepatitis B & C.

(2.5)

Key: 11

- a. It is called “kala yarqan” in common language.
- b. Modes of transmission:
 - Blood transfusion
 - Sharing of needles / syringes / blades
 - Sexual transmission
 - Vertical transmission
- c. Health education pertaining to the modes of transmission:
 - Not to share razors / blades / syringes
 - Screenings of blood / blood products before transfusion
 - Remain confined to your marriage partner only and use of condoms.
 - Avoid unnecessary surgical / dental procedures
- d. Immunization:
 - Hepatitis B vaccine has been recently included in national EPI campaign. 3 doses of vaccine are given on 6, 10 and 14 weeks after birth, along with DPT vaccine.
 - There is no vaccine against Hepatitis C. All the preventive measure are the same as against hepatitis B. Concept of safe sex is important in control of both types of hepatitis, which include confinement to marriage partners only and use of barrier methods (Condoms).

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

ENVIRONMENT

Q.12 Calculate the amount of bleaching powder (33% strength) required to disinfect a well having diameter of 1.8m and depth of water 30m. (2.5)

Key: 12

First method.

$$\begin{aligned}\text{Volume in liters} &= \frac{3.14 \times d^2 \times h}{4} \times 1000 \\ &= \frac{3.14 \times (1.8)^2 \times 30}{4} \times 1000 \\ &= \frac{3.14 \times 3.24 \times 30}{4} \times 1000 \\ &= 76302 \text{ liters}\end{aligned}$$

For 1000 liter required amount of bleaching powder = 2.5 gm

$$\begin{aligned}\text{For 76302 liter required amount of bleaching powder} &= \frac{2.5 \times 76302}{1000} \\ &= 190.755 \text{ gms} \\ &= 191 \text{ gms}\end{aligned}$$

Second method.

$$\begin{aligned}\text{Volume in liters} &= D^2 \times W \times 800 \quad (D = \text{diameter in meters}) \\ &\hspace{15em} W = \text{depth of water in meter)} \\ &= (1.8)^2 \times 30 \times 800 \\ &= 3.24 \times 30 \times 800 \\ &= 77760 \text{ liters}\end{aligned}$$

For 1000 liter required amount of bleaching powder = 2.5 gm

$$\begin{aligned}\text{For 77760 liter required amount of bleaching powder} &= \frac{2.5 \times 77760}{1000} \\ &= 194 \text{ gms}\end{aligned}$$

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

EPIDEMIOLOGY

Q.13 In a population of 1000, measles immunization coverage is 60%, one child goes out of station and comes back with measles from whom 20 more children get measles. Calculate secondary attack rate of measles. (2.5)

Key: 13

Total no. of children = 1000

No. of immunized = 600

No. of un-immunized = 400

Primary case = 1

Secondary attack rate = $20 / 400 - 1 = 20 / 399 \times 100 = 5\%$

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

SCREENING

Q.14 By referring to the following table, calculate:

- **Sensitivity** (1)
- **Specificity** (1)
- **Positive predictive value** (0.5)

	DISEASE	NO DISEASE	
Test +	9	50	59
Test -	1	940	941
	10	990	1000

Key: 14

- **Sensitivity = $9/10 \times 100 = 90\%$**
- **Specificity = $940 / 990 \times 100 = 95\%$**
- **PPV = $9/59 \times 100 = 15\%$**

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

DEMOGRAPHY & REPRODUCTIVE HEALTH

Q.15 Statistics of a Maternity Unit include the following: (2.5)

- **Total numbers of reported live births at this obstetrical unit = 5000.**
 - **No of deaths of children < 1 year of age= 80**
 - **No of deaths of children below 6 months of age = 70**
 - **No of deaths of children below 28 days of age = 60**
- Calculate Neonatal Mortality Rate.**

Key: 15

$60 / 5000 \times 1000 = 12 / 1000$ live births

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)

OCCUPATIONAL HEALTH

**Q.16 The person sitting in front of you is a nursing assistant, working in the medical ward of POF hospital, Wah Cantt. On average he gives 10 to 15 injections to the patients per day. How will you educate him to prevent himself from the needle stick injury?
(2.5)**

Key: 16

- He must keep in mind the risk of having needle stick injury while giving the injections to the patients.
- He must take particular care during the following stages of giving injections:
 - During tightening the needle on the syringe
 - Pulling out the needle from the ampoule after filling the injection
 - Insertion of the needle into the skin or vein
 - Pulling out of the needle after giving injection
 - During capping of the used needle
- In case of needle stick injury he should report to his senior immediately about the incident.
- Active immunization if not vaccinated.
- Passive & active immunization if needle stick injury results before active immunization. (When handling a hepatitis B+ patient)

Weighting: 3

Reference: Preventive & Social Medicine (K. Park)